The Profitable Fall Conference

EVERY man who attended the Fall Conference of the Merchants of the Paper Industry at the Drake Hotel, Chicago, this week, returned to his home a "blooming optimist."

The Conference was well attended. Representative merchants and mill men from every section of the country were present.

The unanimous opinion was that the paper industry was facing an era of stable conditions, increasing volume of business, and better profits. What more could any merchant desire? Any one of the three factors would have been gratefully received. But to come, look and listen, and go away convinced that better times, enlarged operations and better profits were a certainty—why it was to be happy and to laugh! They all did!

There have been some who have doubted the value of the Fall Conference. There should be none now. No other one thing has been of greater benefit to the paper industry than the fall conference this year.

No conference ever held in the industry ever did more or better work. Every meeting was well attended. Every proposition was thoroughly discussed. And there was a flood of light shed on the matter of "cutting prices" and "making profits."

"Making a profit" might well have been the slogan of this conference. Emphasis was directed to this cardinal principle of business at every committee meeting. Wherever two or three were gathered together, there the question of "making a profit" was the dominant point reamed home.

It was in the air, and on the tongue of everybody. "What can we do to make profit?" That was the question that found expression and certain answer. No man who came with any nebulous ideas as to how to conduct his paper business profitably went away unsatisfied. Splendid preparatory work had been done during the past six months by men who know what a profit is, and how to make it. They were present, armed with facts, figures and fresh exhibits which convinced even the most hard boiled old catch-as-can jobber that it was "up to him" to get into the profit-making class. It was either that or "pass out of the picture." And our latest advices are that they are all prepared to keep in the frame.

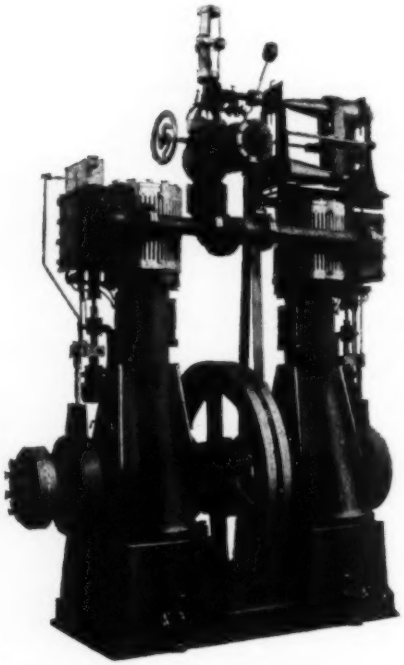
It was a constructive conference; it was an educational conference also. Both the construction and education were helped amazingly because of the adverse experiences most merchants had, doing a large volume of business at no profit, during the past six months.

Adversity is a rigid teacher. And the adversities of the past year have been exceedingly wholesome in that it has made certain bad actors in the industry very amenable to reason and education. A vanishing bank balance will often do more to convince a merchant that his methods are wrong than a whole library of economic direction or months of verbal instruction.

But when, after months of wrestling with an overhead that was constantly greater than the profits on the sales, a merchant comes to a conference where all his problems are righteously and effectually factored out for him, and he can see clearly his mistakes, and the remedy is handed to him, and he knows he can go back home, put it into operation, make a profit once again—"Oh! boy, what a grand and glorious feeling!"

That is why the Fall Conference was such a success. Merchants want more just like them, and mill men ought to have them too. A co-operative, constructive spring and fall conference like this one just closed, between merchants and mill men in the paper industry, is the earnest recommendation of THE PAPER INDUSTRY to the men of the paper industry.

Give Full Power to Paper Machine



ONLY STEAM ENGINES GOOD ENGINES ONLY

Every Troy Engine embodies 34 years' experience in design and construction.

THIS 200 H. P. vertical steam engine drives through a flexible coupling to the paper machine. Speed changing device gives a 5 to 1 range or other ranges if desired. Can be built for belt drive.

Ruggedly built, as the illustration shows, this engine is designed for constant economy in the use of steam. A smooth, dependable flow of power, necessary for uniform paper making is furnished the paper machine.

Built in several sizes and horizontal if preferred. The vertical saves floor space.

Write for the TROY Catalog

Also Heavy Duty Single Cylinder Engines

Specially Adapted For Driving

Fans
Stokers
Blowers
Pumps and
Generators

UTILIZE BOTH THE POWER AND THE HEAT VALUES IN YOUR STEAM

TROY ENGINE & MACHINE COMPANY

Chicago Office 118 West Ohio Street

TROY, PENNA.

Canadian Office Riley Engineering & Supply Co., Ltd. 360 Dufferin St., Toronto, Canada

TROY ENGINES

Dependable Power with Absolute Safety

A Greater Forestry Budget

THE Director of the Budget, General Herbert M. Lord, has before him a vigorous statement from the National Forestry Program Committee in behalf of more adequate forestry appropriations for the fiscal year 1926-7, including an item of $332,000 for forest products investigations, which is an increase of $206,000 over the $126,000 now available for this work.

The paper industry has received great assistance from the work carried on by the Forest Products Laboratory, Madison, Wisconsin, in enabling it to learn definite facts concerning suitability of so-called objectionable woods for pulp making and the nature and extent of decay in pulp and pulpwood during storage and how to evolve methods for its prevention. Many other problems having to do with processes for the utilization of woods are also solved for the benefit of this industry, and are set forth in the declared objectives of forest products research.

The objectives of forest products research are: 1—to determine the fundamental properties of woods, wood by-products, and other forest products; 2—to determine the best processes for their utilization; 3—to bring about the commercial application of the resulting information so as to: (a) utilize or prevent wood wastes, especially in ways which reduce the drain on American forests; (b) develop the use of new and more abundant woods, especially in ways which reduce the drain on scarcer or more valuable woods; (c) increase the durability, usefulness, or value of wood or other forest products in service; (d) stimulate the practice of forestry in any of the above ways, or by otherwise increasing the returns or decreasing the hazards and costs of growing timber as a crop; 4—to assist in working out the utilization problems of National forests.

It has been authoritatively stated that forest growth is going on about one-fourth as fast as we are using timber and that our present merchantable supply will actually meet our needs for about forty-one years. If in the meantime, steps are not taken to offset the drain upon our forest resources, tree-death will have won a great victory. This catastrophe may be delayed and lessened to some extent depending upon how soon reconstruction on a large scale is started by waste prevention in the manufacture and use of wood products, forest management, and increased reforestation.

Specific investigations of direct interest to the paper industry, that have been included in the plea for additional appropriations are as follows:

Reducing Decay During Storage and Using Decayed Wood for Sulphite Pulp

The Forest Products Laboratory has accumulated a vast amount of valuable information on these problems. This information, however, was obtained mostly by small laboratory-scale studies and further experiments must be made on a commercial scale to make the information generally applicable in the industry.

Successful commercial scale experiments would show:

1. That ground wood pulp can be stored over low water periods with greatly reduced decay loss.
2. That less wood will be required to offset losses of pulp due to decay.
3. That less wood will be required to produce a given amount of sulphite pulp, provided the losses due to decay in storage are reduced.
4. That through intelligent selection of partially decayed wood, larger amounts can be permitted to enter the sulphite mill.
5. That the life of the pulp mill will be lengthened through accumulated savings of wood resulting from the elimination of decay losses.

The federal funds expended so far have been generously supplemented by funds supplied directly by the industry. The industry will be further called upon to co-operate in supplying mill facilities, and the Federal Government should supply the technical staff to conduct the mill studies.

Pulping Mill and Logging Wastes

There is little chance, by present pulping processes, for rapid expansion of the utilization of mill and logging wastes for making pulp products. The opportunity to do this has been present for many years and more recently the advancing cost of pulpwood has made the opportunity more favorable. Yet there is little, if any more, mill waste used for pulp than ten years ago. It will apparently be necessary

A Real Key to Bigger Profits

When you're troubled with material handling problems—and many of us are though sometimes can't just put our finger on the cause—then's the time you realize the value of good material handling machinery.

Brownhoist roller-bearing belt conveyors have solved the problems of so many plants that their owners naturally look to them as the key to their bigger profits. Your problem, too, no matter how small, could probably be solved by the use of these conveyor idlers. Their first cost is lower than you might expect and the investment is quickly returned to you in the form of lowered material handling costs.

The simple, sturdy construction of this idler proves its excellence and its performance proves its reliability. Let Catalog M-24 show you why. A copy is yours for the asking.

The Brown Hoisting Machinery Co., *Cleveland, Ohio*

Branch Offices: New York, Chicago, Pittsburgh, San Francisco, New Orleans.

BROWNHOIST

GOOD MATERIAL HANDLING EQUIPMENT

to work out special pulping processes giving high yields and making products with special properties.

The surest way of accomplishing this lies in a systematic investigaton of the chemical means of resolving wood into fibrous constituents. This method of procedure is slow but certain to yield valuable results, although the exact nature of the results can not be foretold. The Forest Products Laboratory has been actively prosecuting such studies to the fullest extent possible with the funds available and for the short time spent has already obtained promising results. For the benefit of sawmill operators and timber owners as well as for its general conservation value this work should be expended.

Strong White Pulp from the Pines

There is no chance for a rapid increase in the use of pines for pulp and paper until a pulp can be made of some other quality than the strong but dark colored and difficult-bleaching kraft pulp which is now the main product from pines. A strong white pulp would offer a new outlet for the mill and logging waste of the southern pine districts without over-loading the market for kraft pulp.

Such a product would have a market of its own because no white pulp now made is comparable in strength to kraft pulp. It would also supplement the bleached sulphite pulp which requires the rapidly vanishing northern conifers and thus release them for uses for which no satisfactory substitute has been found.

To produce such a product will require the investigation not only of bleaching processes but of cooking processes in their relation to the production of an easily bleached pulp. The process finally developed might be a modification of the present alkaline pulping process or it might be something radically different.

An increase in the budget for forest products research in order to permit the carrying on of more extensive work that has already proved itself to be invaluable to the timber using industries, and the paper industry in particular, is most essential. We submit our respect for economy and tax reduction, but urge the necessity of differentiating between true national economy and the so-called economy which makes a small present saving at the expense of large future losses.

* * * *

The Dangers of Paternalism

A GOVERNMENT can do nothing more beneficent than encourage initiative in its people. It is easy for even the best of us to soften, grow stale and show no initiative when receiving subsistence for which we have not worked.

Caring for those who cannot care for themselves is a wise public policy; caring for those who can care for themselves is a dangerous policy and whenever government exercises a paternalism, dry rot creeps in, and the idle mind easily finds devilish things to do.

There has been too strong an inclination among some of our social workers and industrial students to place blame upon capital for situations that were entirely within the power of labor itself to correct. Truckling to anyone who possesses the power of self-development is as bad for character as frost to tropical fruit.

I have in mind at present a number of young men whom I know personally whose opportunities were almost nil, and yet by the urge to self-exertion, by persistent effort, by laudable ambitions, have come to the forefront and carved out distinctive places for themselves. Whenever we can put the fire of a good ambition in the soul of a man, it is wise to do so, even though the operation may give at first a great deal of pain. Our government, if the future of this nation is to be conserved, if its people are to develop the proper initiative, must keep away from paternalism. Men and enterprises must stand on their own feet, respecting the rights of others, acting honestly, but faring only as their merits deserve.

If democracy is fitted for anything, it is for just this kind of government. Whenever it steps within the boundaries of paternalism and truckles to any particular interest, its foundations begin to crumble, and its future is in jeopardy.

Give a person a good objective, inspire in him a good ambition, help him to keep his courses, insist that he work himself and receive nothing more than his work deserves. With this kind of spirit among the people, and particularly among the people in business, we can hope for bigger things from our country. —*Tregoe.*

American Nickel 99

A malleable, ductile commercial nickel

Free from Cobalt

A Nickel that gives you the assurance of the highest purity obtainable. It has the maximum resistance to erosion, oxidation, acids, alkalies, gases and temperature extremes. It gives the desired tensile strength and the greatest ease of working.

Mond 70 alloy

A uniform non-corrosive alloy with a long list of uses

for the Process Industries. You are safe when you specify Mond "70" Alloy. It is a synthetic alloy, the composition and structure always being under accurate technical control. It is the material that meets the needs of exacting and difficult applications—in brief, MOND "70" demonstrates all the engineering advantages of the valuable Nickel-Copper Alloys.

Tell us your requirements—your conditions—and our sales engineers will be glad to advise with you.

If you use Nickel in any form—you should know our products—it will be to your distinct advantage.

May We Serve You?

AMERICAN NICKEL CORPORATION

CLEARFIELD, PA.

Exclusive American Representatives Mond Nickel Co., Ltd.

THE PAPER INDUSTRY

REG. U. S. PAT. OFF.

Vol. 7 OCTOBER, 1925 No. 7

Acidity in Paper

By S. KOHLER[1] and G. HALL[2]

DURING an investigation with regard to the durability of paper, recently completed at the Swedish Government Testing Institute in Stockholm, it became apparent that the acidity of a paper has influence upon its durability.

In general, the presence of acid reacting substances in a paper is due to one or more of the following facts:

(a)—The fiber material itself reacts acid on account of acid reacting substances imparted during the manufacturing process.

(b)—Acid reacting salts of alumina, usually sulphate of alumina, are added to the paper with rosin sizing.

(c)—The paper is surface sized with acid reacting glue.

(d)—The paper is surface sized with glue to which sulphate of alumina has been added as a preservative.

(a) and (c) have ordinarily but a slight influence on the total acidity; in rosin sized papers, acidity is due mainly to (b), and in surface sized papers mainly to (d). For papers both rosin and surface sized, the acidity will consequently be a combination of (b) and (d).

The quantitative determination of acidity of paper is generally made by the extraction of the acid substances with water and titration of the extract obtained with alkali, using a suitable indicator.

All methods suggested up to the present refer to testing of the paper cut into small pieces. However, taking into consideration the difficulty in extracting by water such a hardly pressed and sized fiber sheet as paper, this way of testing seems to cause incomplete and unreliable dissolving of the acid substances present in the paper. Furthermore, no attention has been paid to the various origins of the acidity; therefore, the results obtained from papers with different kind of sizing are not directly comparable.

Herzberg[3] has adopted the following method, suggested by Vandevelde[4] for the determination of the "total" acidity:

Ten grams of paper, cut into small pieces, are extracted with 100 cc. distilled water 24 hours at room temperature with repeated agitation. The extract is drawn off, the paper stock washed with 25 cc. cold distilled water and the total volume titrated with n/10 $Ba(OH)_2$, using phenolphthalein as indicator. The Acidity Number, or the "Acidity Coefficient," is defined as the number of cc. n/10 $Ba(OH)_2$ required per 100 grams of paper.

A thorough investigation of this method showed that the acidity numbers of "double" sized papers, i. e., papers both rosin and surface sized, determined according to this method, almost entirely referred to the acidity of the surface size, while the internal acid reacting matters remained mainly intact. The above mentioned investigation with regard to the durability of paper, at the same time proved that the "external" acidity, due to the surface size, is almost harmless as regards the permanence of the paper, while the "internal" acidity may affect the durability seriously and requires rigid control.

Under such circumstances a new method had to be worked out to permit a more accurate study of the acidity from a durability viewpoint. A satisfactory procedure of testing for total acidity was obtained by preparing the paper sample by grinding before analyzing, submitting this ground stock to repeated extractions with hot water and titration of the extracts with n/100 alkali instead of n/10. Standardization of the extraction to constant volume and temperature

[1] In charge Paper Section, Government Testing Institute, Stockholm, Sweden.

[2] Chemical Engineer, with the American Writing Paper Company, Holyoke, Mass., formerly with the Government Testing Institute, Stockholm, Sweden.

The kind assistance of B. W. Scribner, Chief of Paper Section, Bureau of Standards, in preparing this article is gratefully acknowledged.

[3] Herzberg, Papierprüfung, 5th ed., Berlin 1921, page 172.

[4] Revue des Bibliotèques et Archives de Belgique, 1906, part 4, page 77.

as well as avoidance of all washing of the paper during filtration, also proved necessary to insure results. The method in detail is given below.

II—Method for Determination of the Total Acidity of Paper, as Worked Out at the Swedish Government Testing Institute

Preparation of sample.—The paper is converted into a cotton-like substance by grinding in some suitable apparatus.[5] Previous conversion of the paper in this manner is recommended for all kinds of chemical analysis, with the exception of nitrogen and ash determinations.

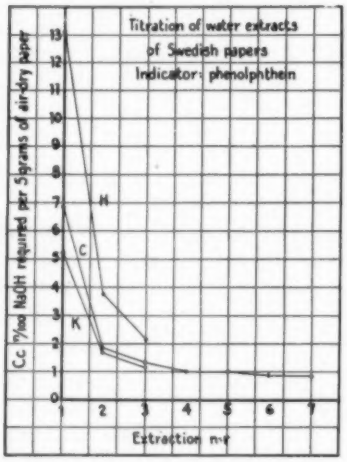


Figure 1

Extraction.—Five grams of ground paper are transferred to a 500 cc. erlenmeyer flask and 250 cc. boiling water added in small portions, the flask vigorously shaken with each addition of water, to secure entire soaking of the paper. If the sample to be tested consists of surface sized paper, this is easily done, as the sizing is destroyed by the grinding; in the case of rosin sized paper, however, the soaking requires care, or the paper will remain partially dry, floating on the surface. In this case very little water is added at first, and the flask thoroughly shaken until a ball is formed of the stock; then the rest of the water is added.

The flask is provided with a cork and a narrow glass tube of about ¾ meter length, acting as condenser, and the mixture is then heated on a boiling steam bath for exactly one hour, shaking two or three times during this period. When the heating is finished, the extract is drained off on a Büchner funnel, using strong suction. The flask is washed with 10 cc. cold water to remove remaining fibers, but no washing of the stock on the filter is permitted. The stock is returned to the flask for two repeated extractions.

Titration.—Each extract is cooled to room temperature and titrated with n/100 NaOH, using phenolphthalein as indicator.

Definition of the Acidity Number.—The Total Acidity Number is defined as the number of cc. n/100 NaOH necessary to neutralize the first three extracts, calculated per 10 grams of bone-dry paper.

The reason of determining the Total Acidity Number by aid of the first three water extracts will be given in connection with a discussion of the method below.

Accuracy of the Method

In order to illustrate the relative accuracy of this method and to ascertain the minimum number of extractions necessary each time, a large number of determinations were performed. Swedish papers of various manufacture—rag and sulphite, rosin and surface sized—were tested with the result shown in Table I.

[5] The grinding was in this instance carried out in a grinder model "Dr. Koerner," constructed for grinding of leather and manufactured by Ernst Grumbach & Sohn, Freiberg, Sachsen, Germany.

TABLE I

Titrations of Water Extracts from Swedish Papers. Indicator: phenolphthalein

Paper	Stock Rag %	Stock Bl. Sul. %	Sizing	Rosin %	Glue %	Cc. n/100 NaOH required per 5 grams of air-dry paper: No. of determination	Number of extraction 1	2	3	4	5	6	7	Sum of first 3 extracts	Average	Total Acidity Number = sum of first three extracts calculated per 10 grams of bone-dry paper
A	100		double sized	1.17	2.42	1	6.29	1.75	1.04	0.80	0.78	0.90	0.65	9.08	9.10	19
						2	6.53	1.60	0.99	0.83	0.90	0.70	0.61	9.12		
B	100		"	1.18	1.45	1	7.00	2.38	1.42					10.80	10.81	23
						2	7.18	2.27	1.36					10.81		
C	100		"	1.23	2.48	1	6.85	1.86	1.37	0.91	1.07	0.94	0.88	10.08	10.06	21
						2	6.91	1.83	1.30	1.14	0.92	0.89	0.83	10.04		
D	100		"	1.25	0.42	1	5.66	2.17	1.23					9.06	9.07	19
						2	5.56	2.14	1.37					9.07		
E	100		"	4.19	2.92	1	15.43	3.74	1.63					20.80	21.41	45
						2	15.98	4.36	1.68					22.02		
F	50	50	rosin sized	3.03		1	6.65	2.77	1.76	1.37	0.84	1.09	0.82	11.18	11.12	24
						2	6.73	2.68	1.65	1.39	0.84	1.14	0.79	11.06		
G	50	50	"	2.00		1	6.51	2.30	1.15					9.96	10.24	22
						2	6.26	2.76	1.40					10.51		
H	50	50	"	4.57		1	13.20	3.64	2.10					18.94	18.87	39
						2	13.00	3.77	2.03					18.80		
I		100	"	2.54		1	6.60	2.04	1.74	1.56	1.27	0.95	0.97	10.38	10.18	22
						2	6.59	1.79	1.60	1.55	1.10	0.07	0.97	9.98		
K		100	"	2.24		1	5.14	1.74	1.31					8.19	8.23	17
						2	5.29	1.80	1.17					8.26		
L		100	"	3.42		1	7.06	2.75	2.11	2.01	1.84	1.56	1.19	11.92	12.34	26
						2	7.54	3.05	2.17	2.48	1.98	1.74	1.35	12.76		

As this table indicates, the method shows comparatively good conformity between duplicate analysis. The medium deviation amounted to 2.3 per cent and was at the most 6.8 percent. The acid substances cling to the fibers very stubbornly; still after seven repeated extractions, the extracts show considerable acidity. The efficiency of the repeated extractions decreases rapidly, and after three to four extractions the acidity of the extracts tends to approach a fairly constant value, only slowly decreasing with continued extractions. A quantitative determination of the total acidity thus would necessitate a great number of extractions each time. With regard to the application, however, the number of extractions to be executed at each determination has been limited to three, or the minimum number, according to table and diagrams, necessary for a characterization of the individual acidity of the papers.

Influence of the Sizing on the Results Obtained

The kind and degree of sizing certainly influence the course of the extractions. To investigate this matter, hand made papers with different sizing—

TABLE II
Extraction of papers with various sizing.

KIND OF SIZING:	Cc n/100 NaOH required per 5 grams of air-dry paper			
	Extract 1	Extract 2	Extract 3	Sum
Rosin Sizing:				
3% rosin and twice the necessary theoretical amount of sulphate of alumina	1.75	1.13	0.98	3.86
3% rosin and 6 times the necessary theoretical amount of sulphate of alumina	5.35	2.20	1.83	9.38
3% rosin and twice the necessary theoretical amount of acetate of alumina	2.19	1.19	0.98	4.36
Surface Sizing:				
Normal addition of sulphate of alumina to the glue	6.73	1.40	1.19	9.32
Extreme addition of sulphate of alumina to the glue	33.82	2.43	1.22	37.47
No addition of sulphate of alumina to the glue.	3.82	0.93	0.81	5.56
Double Sizing:				
1% rosin and 2/3% sulphate of alumina in the beater; surface sizing with glue containing sulphate of alumina	6.75	1.84	1.26	9.85

different kinds of rosin sizing, different kinds of surface sizing as well as double sizing—were tested for acidity according to the method suggested. The results obtained are given in Table II.

The results indicate:

(1)—In principle no difference exists between the course of extractions for rosin sized, surface sized or double sized papers, as in all instances the acid reacting substances only successively may be extracted.

(2)—However, there is obviously a marked difference in speed of extraction between the rosin sized papers on the one hand and the surface sized on the other, as the glue as well as the sulphate of alumina added to the glue, are practically completely dissolved during the first extraction.

III—Internal Acidity

As previously pointed out, a definite distinction must be made between "external" and "internal" acidity, the latter being that of interest from a durability viewpoint. The Government Testing Institute method gives the internal acidity directly for papers only rosin sized; for double sized papers, the most common kind of sizing for high grade papers, a correction must be applied to eliminate the external acidity.

As stated before, the Vandevelde method mainly indicates the external acidity. A double sized paper, from which samples had been drawn before applying the surface size, showed, according to the Government Testing Institute method, only rosin sized a total acidity number of 30.8. After surface sizing the total acidity number had increased to 39.8. The same paper tested according to Vandevelde's method gave, after surface sizing, a total acidity number of 13.2, which is comparatively but slightly higher than the 9.0 caused by the surface size. By shortening the extraction time, the Vandevelde method obviously can be used to determine the external acidity. In order to find the interval of time suitable for this purpose, the relation between time of extraction and acidity numbers was studied, using the aforementioned paper. The following results were obtained:—

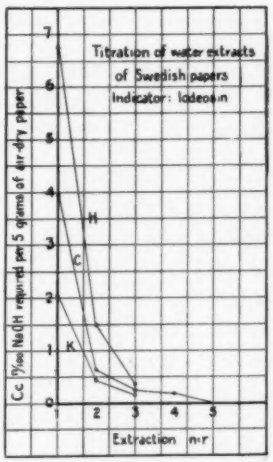


Figure 2

Time of Extraction	Acidity Number
24 hours	13.2
1 hour	12.5
15 minutes	12.3
5 minutes	11.5
2 minutes	9.1
1 minute	8.6

This shows that the glue is practically dissolved within two minutes.

The internal acidity of double sized papers thus may be approximately determined as the difference between the total acidity, determined according to the Government Testing Institute method, and the external acidity, determined according to the following modification of the Vandevelde method:

Ten grams of paper, cut into small pieces, are extracted with 100 cc. distilled water under constant agitation. The extract is drawn off on a Büchner filter without any washing whatever, and the filtrate is titrated with n/100 NaOH, using phenolphthalein as indicator. The external acidity number is defined as the number of cc. NaOH required per 10 grams of bone-dry paper.

IV—Titrations with Iodeosin as Indicator

Attempts to titrate with indicators less sensitive

to acids than phenolphthalein were made. Methyl orange proved unsatisfactory, the water extracts themselves having a more or less yellow color, that made the titrations difficult, if not impossible, to carry out. Richter[6] has suggested titration with iodeosin, a method later extensively used by Quist[7] in connection with wood pulp investigations. Titration according to this method proved satisfactory, after the following standardization of the testing procedure had been made.

TABLE III

Titrations of water extracts from Swedish papers. Indicator: iodeosin

Paper	Cc. n/100 NaOH required per 5 grams of air-dry paper							Total Acidity: Number—sum of first three extracts calculated per 10 grams of bone dry paper
	No. of determination	Number of extraction 1	2	3	4	5	Sum of first 3 extracts	Average
A	I	3.21	0.80	0.24	0.28	0.21	4.25	4.39	9
	II	3.27	0.80	0.46	0.31	0.30	4.53		
B	I	3.76	1.20	0.59			5.55	5.68	12
	II	3.99	1.20	0.61			5.80		
C	I	3.26	0.61	0.28	0.16	neut.	4.15	4.12	9
	II	3.26	0.59	0.24		neut.	4.09		
D	I	*/	0.49	0.32			....	....	..
	II	*/	0.45	0.38					
E	I	8.33	2.22	0.62			11.17	11.28	24
	II	8.93	1.93	0.52			11.38		
F	I	2.71	0.48	0.31	0.12	neut.	3.50	3.65	8
	II	2.89	0.58	0.32	0.08	neut.	3.79		
G	I	2.82	0.47	0.47			3.76	3.56	7
	II	2.32	0.55	0.48			3.35		
H	I	7.02	1.68	0.39			9.09	8.65	18
	II	6.50	1.34	0.36			8.20		
I	I	1.86	0.13	0.11	0.27	0.18	2.10	2.34	5
	II	2.04	0.25	0.28	0.27	0.22	2.57		
K	I	2.08	0.44	0.19			2.69	2.74	6
	II	2.14	0.46	0.18			2.78		
L	I	2.66	0.72	0.44			3.82	4.04	9
	II	2.92	0.81	0.52			4 25		

*/ The extracts reddish colored; titration impossible.

The water extract, obtained from the ground paper as previously stated, is transferred to a 500 cc. graduate, fitted with ground glass stopper, and 60 cc. of an ether solution, containing 1 mg. iodeosin per liter, are added. After shaking, the extract is titrated with n/100 caustic soda, advantageously performed by adding the caustic in small portions with thorough shaking after each addition. The extract must be cooled to room temperature before titration; if titrated at a higher temperature, the ether will continuously evaporate, and if titrated at a lower temperature the rate of separation of ether and water after shaking is materially decreased, rendering the testing operation unnecessarily slow. The titration is continued until the water solution has taken on a reddish tinge, which is observed by looking through the graduate held over a white sheet of paper.

The titration according to this method is based on the fact that iodeosin is insoluble in acid water solutions but slightly soluble in ether and with red color in basic water solutions. As soon as the acidity of the extract is neutralized, the iodeosin is partially dissolved by the water with red color, thus indicating the point of neutralization. As iodeosin is one of the strongest acids used as an indicator and is not sensitive to weak acids as phenolphthalein is, this titration shows only strongly acid reacting substances.

The amount of iodeosin added to each extract, which is the smallest quantity that gives distinct color changes, must not be exceeded, as in such case too low acidity numbers are obtained.

When checking the accuracy of this method, two water solutions, each containing 5 cc. n/100 sulphuric acid, required 4.98 and 5.04 cc. n/100 caustic soda respectively for neutralization.

The ethereal iodeosin solution is advantageously prepared by adding 1 cc. of an alcoholic stock solution, containing 1 gram of iodeosin per liter, to each liter of ether.

In order to eliminate acidity due to the presence of free acid in the ether, blanks are titrated and, if necessary, corrections applied.

Extracts from the papers earlier tested against phenolphthalein, were titrated according to this method with the results shown in Table III.

As this table indicates, the acidity numbers obtained in this case are considerably lower than with phenolphthalein titrations; however, the ratio between them is almost the same. The acidity of the extracts rapidly decreases with continued extractions; out of four papers tested, two gave neutral reacting extracts at the fifth extraction. When titrating with iodeosin, it may thus be considered practically possible to repeat the extractions until neutral extracts are obtained.

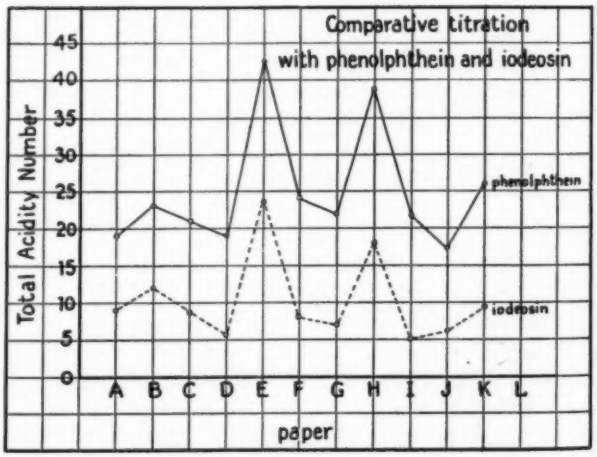


Figure 3

Titration with iodeosin is a much slower procedure than titration with phenolphthalein. In view of the similarity, the titrations with these two indicators have shown (see Fig. 3), it may be considered satisfactory to limit the acidity determinations to titra-

[6] Wochenblatt für Papierfabrikation, 1912.

[7] Finsk Trävaru-och Papperstidning, Aug., 1919.

tion with phenolphthalein when studying the relative durability of paper.

V—Summary

Following a general discussion of the origin of acid reacting substances in paper, it is pointed out that distinction must be made between "external" and "internal" acidity, the former being almost harmless to the durability, while the latter may affect the permanence seriously. A new extraction method for the determination of the total acidity of paper, worked out at the Swedish Government Testing Institute, is reported, and in this connection the advisability of preparing paper samples by grinding before analysis is emphasized.

A method to determine the internal acidity is given; the total acidity is determined according to the Government Testing Institute method, and the external acidity may be approximately ascertained according to a modification of the Vandevelde method; the difference is a measure of the internal acidity.

Development of the Rayon Industry

By DR. M. G. LUFT
Technical Director of the Industrial Fibre Corporation

OF SPECIAL scientific as well as industrial interest and value is an account of the development of the rayon or artificial silk industry contained in an address delivered by Dr. M. G. Luft before the American Chemical Society at the Exposition of Chemical Industries in New York on October 2, 1925.

The statement was made some time ago that "the future belongs to the nation which makes the best use of its coal resources," but no doubt the best use of wood or cellulose resources is also an important factor in national economy and civilization.

Everyone knows and uses cellulose every day in its different forms as it is the most commonly known product of nature, being present in all kinds of manifestations of life, such as wood, plants, vegetables, cotton and linen. The living world could exist for eternity without coal but would not be able to develop without cellulose, a synthetic product of the wonderful power of nature.

Everyone uses cellulose but who knows how the common elements of carbon, oxygen and hydrogen are being put together to create the foundation of life. Modern civilization is based on coal, iron and cellulose. The study of the first two helped to establish the highest productivity of the human being, but regarding cellulose, the research work of modern chemistry has not yet fulfilled its task, although great progress has been made in recent years in the development of chemical knowledge of this most prevalent natural product.

Cellulose

The organs of the plant are composed of cells which are enveloped by a transparent colorless film or membrane consisting of cellulose. The whole framework of the plant is built up from cells. The cellulose membrane is permeable only to crystalloids and impermeable to colloids. Cellulose itself behaves as a typical colloid, similar to many organic compounds of high molecular weight, such as starch or proteins. In trees it builds the cells of the woody portion.

Coniferous woods contain about 60 per cent cellulose, known under the technical term of chemical wood pulp, which is used as raw material for paper and artificial silk. The manufacture of wood pulp and paper is the seventh largest industry in the country.

Nature of Wood Pulp

Wood pulp consists essentially of a large number of hairlike fibers, interwoven so closely that they form a continuous surface, their average length being 3 mm., this being approximately one hundred times their width. In a sheet of paper of letter size there are about three million fibers of natural length. The fibers of cellulose are extracted from the state they are found in, in nature by the pulping process, which decomposes ligno-celluloses in the lignified tissues of perennial stems in the woods. The decomposition of spruce wood, for instance, with caustic soda, yields 42.3 per cent pure cellulose and a residual lye which contains 21.6 per cent of lignin, 18.2 per cent of lactones and hydroxy-acids (as lactic acid), 3.2 per cent acetic acid, 1.7 per cent formic acid and 1.7 per cent of methyl alcohol.

Raw Materials of Rayon

For the manufacture of artificial silk, today called Rayon, spruce pulp and cotton are used as raw material. From the cotton the cheaper part is taken, namely, the cotton cells projecting from the seed capsule as seed hairs, commercially named cotton linters, a by-product of the cotton seed and cotton oil mills. There are hundreds of millions of dollars invested in plants using cotton seed as a raw material for oil and by-products, this being the second largest industry in the southern States.

Alpha Cellulose

Alpha cellulose is a resistant cellulose insoluble in caustic soda. Beta and Gamma cellulose, also known under the name of hemicelluloses, are soluble in alkali. Beta cellulose dissolves in caustic soda with a yellow color and seems to contain oxycellulose. It

has an acid character, being soluble in alkali, it forms also insoluble salts with iron and copper which are liable to discolor rayon if these metals are not eliminated.

Gamma Cellulose

Gamma cellulose is a decomposed product which is soluble in alkalis and acids, and is produced by hydrolysis of oxycellulose, the result being a mixture of pentosans and hexoses, like mannose, glucose and dextrose. Hemi-celluloses have high reducing power and influence the shade of color, a point important in the manufacture of rayon because the content of hemi-cellulose interferes with uniform color in the dyeing process. For this reason the bleaching of cellulose must be controlled very carefully to avoid oxidation of the material. Cellulose when heated with sodium hydroxide decomposes to oxalic acid, and heated with dilute hydrochloric acid furfural is split off. Cellulose treated with inorganic acids or acid salts at high temperatures becomes brittle and changes to hydrocellulose. Fused with caustic alkalies it decomposes to carbon dioxide, hydrogen and acetic acid. Distillation of cellulose gives wood alcohol, acetone and acetic acid.

Due to its aldehyde character, oxycellulose has a pronounced reducing power which can be expressed by the copper number, that is, the amount of copper which is precipitated from Fehling's solution. The presence of oxycellulose in wood pulp or rayon influences the quality of the final product, especially its strength and uniformity of dyeing.

Mercerized Pulp

Cellulose when treated with caustic soda, which process is known as mercerization, is changed to cellulose hydrate, commonly known as soda cellulose. This compound has an increased capacity for dyes and greater reactivity, but is unstable and undergoes changes of molecular structure. The direction and the velocity of the reaction can be influenced by temperature and time, which process is of great importance in the industry and is known in the viscose rayon manufacture under the name of "aging of soda cellulose."

Chemistry of Cellulose

The theory and synthesis of cellulose are so far very speculative, and research work on a large scale ought to be contributed to the theory of cellulose structure. We in the industry are not so much interested in the synthesis of our raw material but rather in the continuous supply of wood cellulose, supported by reforestation, and this is, or rather will be a great problem in the economy of wood supply in this country.

Regarding the chemical character of cellulose it may be said that it is an aliphatic alcohol, building esters and alcoholates. It contains the characteristic hydroxyl group. Interesting contributions to the theory of cellulose are the researches of Herzog. According to Herzog, the x-ray spectrographs indicate that the cellulose in the plant fibers is composed of crystals symmetrically arranged with respect to the axis of the fiber. If one allows x-rays, that is, rays of the shortest wave length to fall upon a crystal, there occurs a diffraction of the light rays and the interference may be recorded on the photographic plate. Herzog reaches a supposition that the molecules of those micro-crystals of cellulose contain 24 atoms of carbon. The nucleus of them seems to contain 5 atoms of carbon, 3 free hydroxyl groups and 2 bridge oxygens.

Cellulose is a polysaccharide produced by a molecular condensation of glucose residues to the polymerized molecule of cellulose. The relationship between celluloses and glucose has been established by Rudolph Willstatter and J. O. Irvine. According to Irvine, the cellulose is a lactonyl derivative of a cyclic acetal related to the polysaccharides. According to Hibbert, cellulose is a polymerized form of anhydro glucose. This theory is opposed by Cross and Bevan who maintain that the cellulose molecule is a ketonic derivative, which is capable of polymerizing to give ring formations on the methylene group.

Research Needed

The constitution of cellulose remains a problem for research as chemistry is still far from the solution of this complicated problem. In the meantime the industry possesses precious material and knows how to use and transform it into a product of economically higher value, such as artificial silk. We are not able to keep the valuable raw material and wait for the results of research. We have to produce and sell the product.

Synthesis

Another important and difficult task for research is the synthesis of carbohydrates. It is believed that chlorophyll has the function of a catalyst for the synthesis of carbohydrates in plants whereby carbon dioxide, water and oxygen are the elements of the structure. Primarily methyl alcohol is built, then formaldehyde, and by polymerization the plants form of it carbohydrates, such as sugar, starch and cellulose. The mechanism of those photo-chemical processes is not yet known. We know only that carbon dioxide dissolved in water is changed to formaldehyde by ultra-violet light of short wave length, also known is the polymerization of formaldehyde to trioxymethylene. Butlerow in 1861 obtained a sugar-compound by condensing trioxymethylene with lime water. Working in the same direction, Emil Fischer obtained synthetic carbohydrates which finally culminated in the synthesis of fruit sugar. In this connection the recent research results of Stoklasa and

Baly are valuable. Here awaits the research chemist the problem of formation of organic matter from inorganic as presented by nature.

History of Artificial Silk

Solutions of baffling problems usually bring only few changes in the practical methods of manufacture, but the chemist always looks for the exact knowledge of the happenings in the production based entirely on synthetic processes. This is the desire of one of the youngest industries, namely, the artificial silk industry, which is approaching its fulfillment but is still in need of help from chemical and mechanical research. Research work results in a better product obtained at a lower cost, an achievement always desirable to a chemist.

Manufacture of rayon is a good example of an industry where the technique is considerably in advance of the theory of the process which at the present time is based mostly on empirical research. The publications are scarce, as most of the research so far has been carried out by manufacturers, remaining unpublished, and the patent literature contains little if any information of scientific value.

How the Silkworm Spins Silk

This fiber is not a substitute for silk. It is a distinct textile product as is wool, silk, cotton, flax, etc. We see how the silkworm produces silk and we are trying to reproduce in a mechanical way this natural process, using an entirely different chemical formation. The silkworm changing from the caterpillar to the chrysalis stage in spinning its cocoon ejects through two extremely fine spinnerets, which are placed in the mouth, a semi-liquid viscous substance which leaving the glands hardens immediately upon contact with the air. It is composed of two albuminous products containing about 60 per cent fibroin and 20 per cent sericin, the latter being a soluble gum. One cocoon of bombyx mori contains up to 700 yards of silk.

The behavior of the silkworm in spinning its cocoon is interestingly described in a booklet issued by Green, Ellis & Anderson. When ready to spin their cocoons the worms evince a desire to climb. They are then placed on trellises constructed of bamboo and rushes, with branches of rice straw to hold the cocoons. When the worm is placed on the trellis for spinning it discharges through minute apertures in its lower jaw two silk filaments in the form of a gummy liquid which hardens upon exposure to the air and acts as a support for the cocoon. The worm then doubles itself on its back, almost like a horseshoe, with its legs on the outside, and emitting the filament from its tubes winds it round and round its body with rapid circles of its head. It is estimated that its head describes about one ellipse a second, and some 300,000 in making the cocoon. This process takes four days.

Principle of Rayon Manufacture

The synthesis of rayon is based on a chain of reactions of the cellulose molecules, and the history of the past forty years is a period of research on cellulose in connection with this synthesis until it has been transformed into a commercial enterprise of a far-reaching young industry. The principle of producing artificial thread is to dissolve cellulose in the form of its various compounds and force the semi-liquid substance through fine capillary openings to precipitate it again in the form of a thread composed of pure cellulose. The spinning solution is forced under pressure through fine orifices into a a precipitating solution called "spin bath" and the produced filaments gathered together under tension and wound on spools.

The manufacture of artificial silk is a series of complicated mechanical and chemical operations. It is a matter of producing a chemically and physically perfect uniform fiber, for the time being based on plant experience, established rather on empiric formulas, than, as said before, on scientific proceedings.

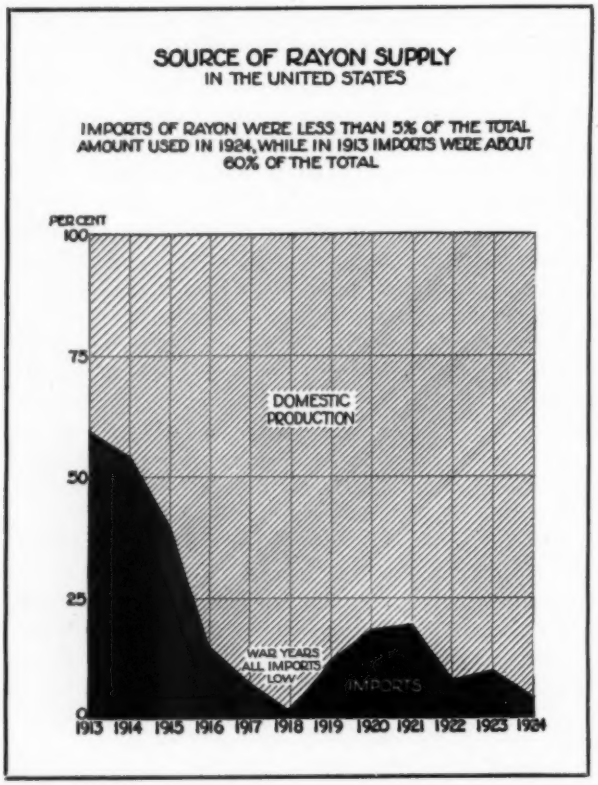
A Century Old Idea

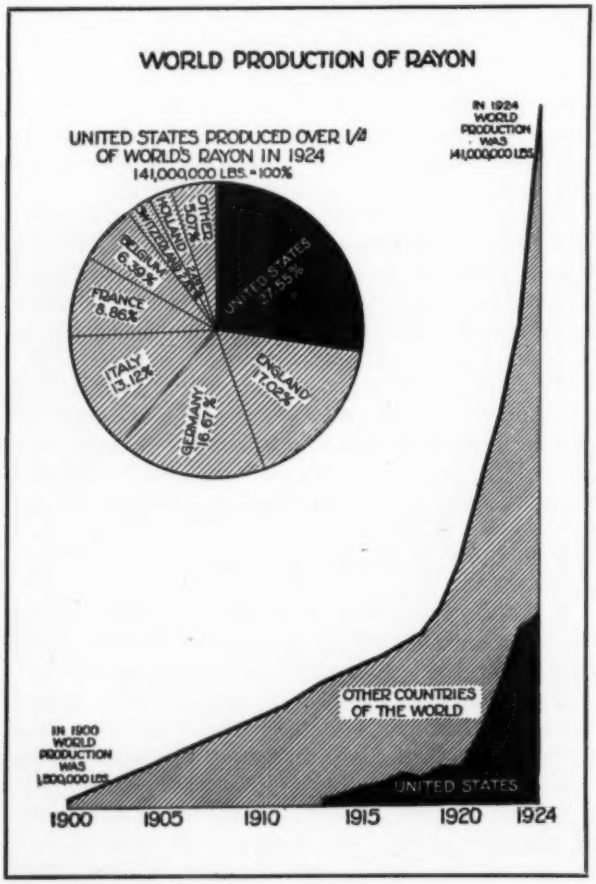
In 1734, Rèaumer suggested replacing natural silk with an artificial product. This idea was forgotten until 1855, when the Swiss, Andemars, patented a process of spinning ether-alcohol solution of nitrocellulose, by dipping a pointed steel rod into the solution and pulling a thread. In 1882 Swan, Wyne, Swiburne and Powell produced nitrocellulose threads for carbon filaments for electric bulbs, but they also were not commercially successful.

In 1884, Count Hilaire de Chardonnet first conceived the idea of forcing a collodion solution through fine capillary openings and patented a manufacturing process in the same year. The nitrocellulose solution was pressed through fine jets into a precipitating bath and the fine filaments were wound in groups. The product was not yet denitrated and so was very inflammable. Later on he started to make artificial silk on a commercial scale and the first plant was erected in Besançon, France. In 1890 Despaissis dissolved cellulose in an ammoniacal solution of copper hydrate, but it was not until 1897 that Pauly was first able to start the production of copper ammonia cellulose.

In 1892, Cross, Bevan and Beadle discovered the cellulose xanthate which they named viscose. This discovery gave the start to viscose manufacture, which is today the most widely used process. About the same time, the acetate esters of cellulose were produced by Cross, which became the basis of another synthetic fiber, known as acetate silk.

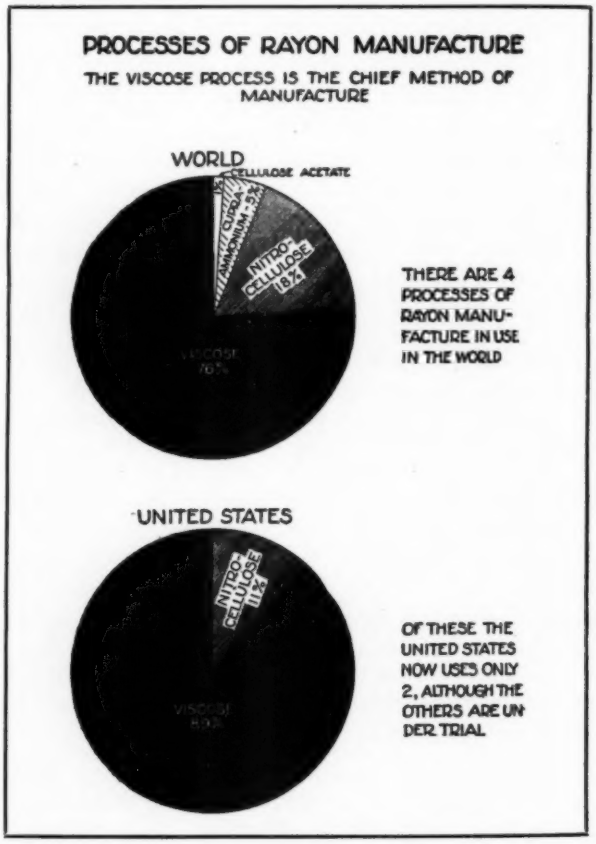
In 1891, the first plant was built for the production of Chardonnet silk according to the nitrocellulose process, by the "Societé Anonyne pour la Fabrication


SOURCE OF RAYON SUPPLY
IN THE UNITED STATES
IMPORTS OF RAYON WERE LESS THAN 5% OF THE TOTAL AMOUNT USED IN 1924, WHILE IN 1913 IMPORTS WERE ABOUT 60% OF THE TOTAL
PER CENT
100
75
50
25
0
DOMESTIC PRODUCTION
WAR YEARS ALL IMPORTS LOW
IMPORTS
1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924



de la Sois de Chardonnet," in Besançon. Most of the manufacturing organizations met technical difficulties and failed on account of the operating troubles due to the very complicated chemical reactions and mechanical equipment, until before the war, the plants in Germany and England established financial success after the chemical side of the process had been greatly improved by continuous research work covering a period of twenty years.

During this time and in the following years, innumerable patents covering the chemical and mechanical improvements were taken out. In the United States unsuccessful attempts were made until 1913,


PROCESSES OF RAYON MANUFACTURE
THE VISCOSE PROCESS IS THE CHIEF METHOD OF MANUFACTURE
WORLD
CELLULOSE ACETATE
CUPRA AMMONIUM 5%
NITRO CELLULOSE 18%
VISCOSE 78%
THERE ARE 4 PROCESSES OF RAYON MANUFACTURE IN USE IN THE WORLD
UNITED STATES
NITRO CELLULOSE 11%
VISCOSE 89%
OF THESE THE UNITED STATES NOW USES ONLY 2, ALTHOUGH THE OTHERS ARE UNDER TRIAL

when a production of one and one-half million pounds was reached, based on the viscose process. In England the people laughed when silk was begun to be manufactured in Manchester, claiming that "They try to make silk stockings out of cabbage."

At this point, Dr. Luft gave a detailed account of the four main processes of manufacturing rayon. As these have been touched upon in a previous article in THE PAPER INDUSTRY the account will be omitted.

Yield of Rayon from Pulp

Discussing yields from pulp, Doctor Luft observes that one ton of purified sulphite cellulose produces in a manufacturing way, 1,500 pounds of viscose

rayon, being nothing else than cellulose. The cost of bleached sulphite pulp is about four cents a pound and the present market prices for a good quality of rayon is $2 a pound. This illustrates the value of research and ingenuity of chemists applying intricate methods and labor increasing the value of raw material from four cents to $2. It shows in dollars and cents the financial power and value of chemistry in industrial applications, the chemists' work being a transformation of one kind of cellulose into another.

To obtain uniformity of product which is absolutely necessary, the chemical process of preparing the cellulose solution and the spinning of rayon must be continued day and night, and is never actually stopped the whole year around. This illustrates the difficult task of this type of efficient organization.

The World Production of Rayon

Supplementary to Dr. Luft's paper, it will be of interest to reproduce from Green, Ellis & Anderson's book some statistics of production of rayon, which is now far in excess of that of natural silk.

The world production of rayon in 1900 was 1,500,000 pounds, in 1905 it had jumped to 10,000,000 pounds, by 1911 the production had reached 20,000,000 pounds, by 1913 it was 25,000,000 pounds, by 1916, 30,000,000 pounds. In 1919, 1920 and 1921 the output was respectively, 40, 50 and 65 million pounds and in 1922, 1923 and 1924 nearly 80, 97 and 141 million pounds respectively. These facts are graphically shown on the accompanying diagram. It is pertinent to note that in 1922 for the first time the production of rayon surpassed the production of natural silk, which varies around 66,000,000 pounds a year. According to a report presented at the 1924 annual meeting of the Snia Viscosa of Turin, the production of cotton in 1923 was 11,020,000,000 pounds; of wool, 2,865,000,000 pounds; of silk just under 75,000,000 pounds and of rayon nearly 100,000,000 pounds.

It appears from these figures that the United States holds a position far ahead of all other countries. The greatest American plants are those of the Viscose Company, affiliated with the English Courtaulds, Ltd. This company's plants are located at Marcus Hook, Pa., Roanoke, Va., Lewiston, Pa., and Nitro, W. Va. Then come the Tubize Artificial Silk Company at Hopewell, Va., which is affiliated with the Belgian Tubize Company; the duPont Rayon Company operating under French viscose patents, with plants at Buffalo, N. Y., and Nashville, Tenn.; the Industrial Fibre Corporation of America, whose plant is located at Cleveland, Ohio; the Lustron Company, with works at South Boston, Mass., and several small concerns as yet commercially unimportant.

President Coolidge Takes Cognizance

In discussing the commercial influence of rayon on the textile industries at this year's meeting of the National Cotton Manufacturers' Association, President Coolidge commented as follows on the remarkably rapid growth of rayon production throughout the world:

"Production of artificial silk on a commercial scale was not attempted until after the beginning of the present century. It was not established in this country until 1910. Yet, in the last fifteen years, the industry has grown so rapidly that now the world production is around 100,000,000 pounds annually, of which more than one-third is made in the United States alone.

"Our production is just about twice that of any other country. Yet even at this, there are still some imports. At the same time, the United States is the largest manufacturer of silk and the largest consumer of raw silk. The enormous consuming capacity of the American market is indicated by the fact that our imports of raw silk increased from 33,000,000 pounds to over 49,000,000 pounds from 1918 to 1923. That is, in the very years in which the artificial silk industry was accomplishing its huge expansion, the real silk industry was still able to grow at an astonishing rate."

Steam Used By Oil Burners

TO FIND the amount of steam used by a steam jet type oil burner, Napier's rule can often be applied with considerable accuracy. This rule is applicable wherever steam is allowed to flow directly from high boiler pressure into the atmosphere as in soot blowers, steam jet blowers, etc. The rule is: "Multiply the area of the opening in square inches by the absolute steam pressure in pounds per square inch and divide by 70." The result is the weight of steam in pounds flowing through the opening every second.

For oil burners I have converted and expanded this rule so as to make it more applicable, as follows:

"Multiply the absolute steam pressure in pounds per square inch by the area of the opening in square inches. Then multiply by the cost of fuel oil in dollars per gallon. Then multiply by 64.3 and into the result divide the number of pounds of water evaporated into steam in the boiler or boilers per pound of oil." The result is the cost of steam in dollars per 10-hour day.

Example: What is the cost of steam per 10-hour day flowing through a ½-inch round opening in an oil burner where the absolute pressure is 100 lbs. per sq. in.; oil cost $.05 per gallon, and 15 lbs. of water are evaporated into steam per pound of oil?

By means of tables, or mathematically, it is a simple matter to find that the area of a ½-inch round opening is 0.196 sq. in.

Substituting in the above rule we get $4.20 per 10-hour day as the cost of the steam.—Schaphorst.

Standardizing Power Production in the Paper Mill

Report No. 1—Power Distribution and Efficiency

BY LYNN L. ARMANTROUT

IF A proper power requirement for the paper mill is to be determined, or a daily check made to effect savings in power generation or power used, it is necessary to have a daily detailed record of steam and electrical power consumed by each department in the entire mill. The power plant efficiency should be known daily, and large steam or electric consuming units in the plant individually recorded in such manner that their daily performance can be compared and any variations of efficiency readily noted.

The form of a power distribution and efficiency report will be determined by the information desired and the equipment available for obtaining such data. In many plants the lack of metering equipment limits the scope of the information that can be obtained and handicaps the engineer at the start, making it necessary for him to get reliable data from meters as far as possible and use this material as a basis for approximate calculations to finish his records. Needless to say, such a shortage of metering facilities in a paper mill may prove a very costly matter, allowing large waste in units not metered which may go on indefinitely, when a daily check by means of meter records kept on a daily distribution report will show the defective operating condition. It is usually found that a known faulty machine can be made to work correctly, once the defect is reported.

While many paper mill engineers can show a lack of meters to account for a continued bad operating condition, there are countless plants very well supplied with metered units which have no systematic record system or daily check to reveal the power production leaks that are likely to occur in every plant and mill. Well informed papermakers see that the meters are provided and that they are used systematically for improving performance of the mill, and for establishing practical standards of efficiency to be followed as near as possible in every-day practice.

Simple Reports Valuable to Engineer

One reason for the lack of reports and records often found in plants equipped with meters, is that the record systems offered to the engineer are too intricate and are involved with a mass of detail work concerned with cost accounting, instead of power distribution and efficiency. Such cost system reports require much adeptness at calculations foreign to engineering practice, and are not of immediate value to the practical engineer in giving him data he needs to improve the operation of his department, or to check up on the efficiency of the steam consuming papermaking units. In organizing a power distribution and efficiency report to be kept by the engineer for his use, all figures should be omitted which are not related directly to the efficient generation of steam and its distribution.

The power distribution part of the report is the basis of the power cost system and is valuable to the cost-accounting department, whether or not the engineer keeps a cost record. If the distribution and efficiency report is given in proper detail, it can be made without regard to cost accounting, making it with the idea of its value to the engineer only. Only such data that will form a basis for comparison to show any excessive amount of steam consumed by any production department or unit, or data to show efficiency of steam generation, should be given on this report.

Practically all plants are amply provided with electrical switchboard meters, which are read hourly, regardless of whether or not a steam report is kept. In the report form given, which shows the electric power consumed in total kilowatt hours, it is assumed that such hourly ammeter readings are made on a separate report, as it serves various purposes besides those related to electrical distribution, and there is not room enough on the steam distribution and efficiency report for a detailed electrical distribution record. It is as important to know the electrical load of all units by frequent readings, however, as it is to know the steam consumption.

Steam used on the paper machine varies very little with the kind of paper made, provided the dryers are equipped with an efficient steam circulating and trap system. The motor load on units in the beater room comprise a large share of the total power consumed by the mill, and also forms the largest steam and electrical load that varies with the grade of paper being made. Beater room power requirements vary decidedly with different grades of paper, and so close check of electric power consumed per unit in this department is important as a basis for standardizing power production in the paper mill.

Power distribution and efficiency reports will vary with different plants and operating conditions and for that reason the report shown in this instance will apply for this plant only. The main things of importance to the engineering department are practically the same in every paper mill, however, and the report will only vary with the number of paper machines of steam or electrical drive, the number of

departments not directly concerned with papermaking being served by the main power plant, and variation in boiler equipment such as forced draft, economizers, or superheaters.

Description of Table

In making the form of this report, the entries from day to day are carried in a vertical column with subject heading at top of column so that the weekly totals can be easily added and shown on the report. The weekly report shown, as actually made, is on a sheet large enough to carry one month's records and the monthly totals shown with daily and weekly on the same page and column.

The records shown are for a two paper-machine mill, with one machine entirely electrically driven and one machine with electrc drive on constant speed sections and steam engine on variable speed sections and dryers. The power plant has nine boilers with equipment shown as recorded. Data was obtained in very cold weather, as shown by heating system steam consumption.

As will be noted, the entire mill was running on only Monday and Saturday; the steam engine unit alone on Tuesday and Friday, and on Wednesday and Thursday the electric driven machine only. The paper box mill and coating mill was running 10 hours daily except Saturday afternoon. This particular report is given because of its various operating conditions to show how irregular runs affect the nature of the report as a whole, and not because of any special papermaking production features. The purpose of the article submitted is to show a form of engineer's report of operating value to the power plant man, as put in operation by a practical paper mill engineer.

The important item to be considered in the power distribution calculations is the exact amount of steam and electricity used by the main mill in the production of paper only.

Electric power generated and its distribution is here shown in total sums for comparison from day to day with the total boiler H. P. developed, so it can quickly be seen whether the coal consumed is for steam or electrical purposes and how they vary in their relation to each other from day to day.

The "Total Boiler H. P. Consumed" is shown here, and its distribution is given in the terms under "B. H. P. Used by Main Mill," "B. H. P. Used by Box and Coating Division," and "B. H. P. Used as Electric Power by Box and Coating Divisions." The latter item is obtained by finding the B. H. P. used by the turbine per kilowatt hour at the board, and charging the electric using department accordingly; thus determining the total B. H. P. used by these departments, and making it possible to know the true B. H. P. used by the main mill.

Plants equipped with venturi or other meters for measuring the amount of water fed to the boiler and who also measure the steam consumed as shown in this report, can find the item "B. H. P. Blow-Down and Pop-Valve Loss." There will always be a variance of from 5 to 15 per cent between the amount of water put in the boiler and that shown in steam consumed by the plant. This loss is due to blow-down and pop-valve and is an important item to watch, as it will indicate leaky valves or careless operation ordinarily hard to check accurately.

POWER DISTRIBUTION AND EFFICIENCY REPORT

	Week Total	Sun	Sat.	Fri.	Thur.	Wed.	Tues.	Mon.
Total K. W. H. Generated	188564	4800	41072	28671	26430	29600	19890	43200
K. W. H. Used by Main Mill	180013	4747	41300	27091	25205	27210	18630	42190
K. W. H. Used by Box and Coating Division	6551	53	673	980	1165	1390	1270	1020
Total Boiler H. P. Consumed 7 A. M. to 7 A. M.	403947	10720	94407	56665	54072	47558	53179	87446
B. H. P. Used by Main Mill	360283	18377	81300	52068	49333	40073	45546	81746
B. H. P. Used by Box and Coating Divisions	23053	1273	2510	3271	4046	4732	3040	4340
B. H. P. Used as Electric Power by Box and Coating Divisions	8732	70	897	1306	1553	1853	1093	1360
B. H. P. Blow Down and Pop Valve Loss 8%	31986	1577	6732	4533	4071	3804	4254	6995
M. Lbs. Steam for Paper Machine Engines	227	.....	55	61	.....	.....	57	54
M. Lbs. Steam for Drying Paper Machine No. 1	2302	.....	268	224	.....	.....	308	242
M. Lbs. Steam for Drying Paper Machine No. 2	1440 2	.....	292	.....	342.7	440	.....	365.5
Lbs. Steam for Beater Room	30433	.....	8460	4173	6130	4700	5740	9870
M. Lbs. Steam for Lights and Heating System	2291	269	307	351	327	334	328	345
Total Tons Coal Used	772 6	41 4	151 9	101 5	98 9	93 8	104 3	180 8
Tons Coal Used Main Mill	708 8	38 6	147 5	93 7	90	81	98	170
Lbs. Coal per B. H. P.	Av. 3.7	4 2	3 6	3 6	3 6	3 9	3 9	4 1
Lbs. Water Evaporated per Lb. Coal	Av. 8.9	8 2	9 5	9 5	9 5	8 7	8 7	8 3
B. T. U. in Coal as Received	Av. 13071	13000	13000	13500	13500	13000	13000	13000
Boiler and Grate Efficiency	Av. 66%	61%	71%	68%	68%	67%	65%	62%
Lbs. Coal per Sq. Ft. Grate Sur. per Hour	Av. 29	27	28	24	30	36	32	31
Feed Water Temperature Average	Av. 207	200	210	206	210	209	210	208
Stack Temperature Average	Av. 422	460	408	420	410	435	415	420
Degree Steam Superheat	Av. 118	105	118	120	122	123	120	120
Feed Water Rise in Economizer	Av. 108	97	110	100	112	106	108	110

This table is only a form of an engineer's report of operating value to the power plant man. Its figures are but examples which square up with those shown in the Power Production Report published in the August issue.—Editor.

Steam used for paper mill engine drive and that used for drying paper or boiling water in the beater room is shown in 1000 pounds of steam instead of figured out for B. H. P. The items are for comparative purposes and are not concerned with the cost system unless some special information of this kind is wanted. The B. H. P. can quickly be figured when desired.

Steam used for heating and lighting is charged

to that consumed by the main mill and is considered as a part of the manufacturing process. Close check on these items are advisable and will often present an opportunity to make big savings due to faulty steam traps and vacuum return system or similar trouble.

The total tons of coal used is found in various ways, but is often difficult to arrive at accurately for daily consideration due to water or refuse in the coal when weighed. Coal should be weighed after it has gone through the crusher and has had the foreign matter, such as iron, removed. As a further aid for accuracy, it is fortunate if the coal can be in the bunkers long enough for most of the excess moisture to dry out before weighing. Successful scales and meters are on the market for weighing the coal as it passes from bunker to stoker coal box. This records the coal in its driest state and in the condition actually fed to the furnace.

It is necessary to know the "Pounds of Coal Used per B. H. P." in order to find the "Tons of Coal Used by the Main Mill." In figuring the "Pounds of Coal Used per B. H. P." item, the total B. H. P. consumed as measured from the steam flow meters is used. Multiplying the "Pounds of Coal Used per B. H. P.," times the "B. H. P. Used as Steam and Electric Power by the Box and Coating Mills," gives the coal consumed in delivering power to these departments. Subtracting this sum from the "Total Coal Consumed" leaves a balance for "Tons Coal Used by Main Mill" in making paper.

In calculating "Pounds Coal Used per B. H. P.," "Pounds Water Evaporated per Pound Coal," and "Boiler and Grate Efficiency," the total water as measured before entering the boiler can be taken as a basis for pounds of water evaporated and divided by the total pounds of coal consumed. This gives a higher result than shown in this report as the boiler efficiency in this example is taken from the steam consumed. Figuring actual evaporation is better for knowing boiler performance and this method should be followed provided accurate meters are available. As a basis for daily check either method is all right as long as it is used the same way in all reports.

"Pounds of Coal Consumed per Square Foot Grate Surface per Hour" is seldom shown on a daily report, but is an important item to watch and is of especial value where the load varies greatly for long periods. A mill may run at full production which calls for nine boilers at high rating during a period of three or four days and then stop one machine and drop a load of twenty thousand B. H. P. daily for the rest of week. By considering the proper amount of coal to be burned per square foot of grate surface per hour in advance and using this as a basis for calculations, the correct number of boilers for the changed loads can be known and any surplus boilers cut out at once, without a few hours' experimenting, as is usually done. This will also apply for additional load as well. The writer had a table prepared showing the number of boilers to be operated for each range of loads met at that plant. This chart was posted in the engineering office and when an order's run was finished and a machine shut down at night, or when the chief engineer was not at the plant, the head fireman knew exactly what number of boilers to carry.

Feed water temperature in the heater and its further rise in the economizer should be watched especially close as all the heat from exhaust steam or waste gases that can be returned to the boiler in the feed water means a direct saving in coal. Drops in temperature rise in the economizer will probably mean scaled or soot-clogged tubes which must be attended to promptly to prevent big fuel losses.

High stack temperature should be watched for and avoided and every means for keeping a close watch on the flue gas action should be taken. Too high temperature can be traced in most cases to sooty or scaled tubes, or defective baffles. It is evident that the daily average stack temperature should show on the boiler efficiency report as an item of vital interest.

Superheat does not vary so radically from day to day, but as the tubes may become coated inside with scale in a few months and fail to function properly, the superheat check should be made with other matters of consequence.

One important contributing factor to the record of boiler performance as a whole is the daily data of each boiler individually. Each boiler should be equipped with meters recording action of air control mechanism and steam delivered. When the coal is measured for the separate boilers, a complete boiler efficiency record should be kept on each boiler so any inefficiency shown on the report of total values can be accurately traced to the faulty unit.

By following the general suggestions given above, and making provision for special conditions encountered in every paper mill, the engineer can have a practical daily power analysis to use as a basis for any cost or power production calculations that may arise, in addition to having a daily check on steam consumption of each metered unit so any inefficiency may be quickly noted.

Some engineers prefer putting evaporation and steam distribution items in terms of thousand pounds of water evaporated "from and at 212," or "equivalent evaporation of thousand pounds of water." Such methods are strictly proper and the engineer should make the report to read in terms that will be most readily interpreted by him. The elements and principles of the report remain the same in either method used. Future cost reports and power-production analysis records will be given in boiler-horsepower terms.

The power cost record to appear in a later issue will use the data given here as a basis for its cost accounting.

Foreman Training in the Paper Industry

Part III—Division Material for Foremen's Conferences

By J. K. NOVINS

Author of "A Training Program for the Factory Foreman," "Foreman Training in Practice," "Manual of Practical Training for the Railroad Foreman," etc.

The Gentle Art of Handling Men

SEVERAL sessions of a foremen's conference are often devoted to discussions on methods of handling men. This topic is touched on under several subdivisions. One is concerned with man requirements for certain jobs in the plant. The other is concerned with the various ways of creating interest and satisfaction among the workers. The last deals with the broad classification of co-operation. Each of the three classifications contains enough meat to make possible a very interesting discussion session. After a consideration of these factors of leadership the foremen are prepared for a session or two devoted to the subject of accident prevention, for the latter phase of management can be understood only after the foremen are made to realize the value of human elements on the job. Therefore, the subject of accident prevention and safety work, as far as the foreman is concerned, will be taken up in the next article.

This series is a manual on the subject of foreman training, and as such is replete with valuable suggestions for the installation of a foreman training course in the paper industry.

Part Three contains eight chapters, of which the two herewith are the fifth and sixth. "Effective Orders—How to Give Them" and "How Foremen Solve a Production Difficulty" will appear in the next issue.

The author of this series is available to answer any inquiries regarding any phase of foreman training on which the reader might wish to be enlightened.

In this article let us review how the factors of man leadership have been covered at past conferences of paper plant foremen.

Knowledge of Man Requirements

Foremen will agree that the best way to secure the co-operation of workmen is to first of all choose workmen for the job who are physically and mentally equipped for the particular job. When the foreman truly understands the workman's mental and physical equipment for the job he has a definite idea of what sort of co-operation he can expect. Furthermore, the foreman is guided in recommending promotions to more skilled jobs.

Of course, in the large plants the hiring of workers is by the employment department, which has the final say in the selection of suitable applicants. But the tendency at the present time is for the employment department to consult the department foremen on the selection of workers. This is the case in the A. M. Collins Company plant. There the foremen personally investigate and approve of all men hired.

At the last conference of foremen held at the plant, the leader requested the foremen to draw up man requirements for a number of distinct jobs. It was suggested at the conference that such outlines, when made available to the employment department and to the foremen, would result in a more successful choice of workers.

Thus, Foreman Louis McManus, foreman of the embossing department, drew up a man requirements chart for the job of pressman. This took the following form:

MAN REQUIREMENTS FOR A PRESSMAN

1. Sex: Male.
2. Entrance age: 20 to 25.
3. Nationality: Not important.
4. Color: White.
5. Skill: Average.
6. Education: Must speak and read English. Must be able to count to 1000. Additional mathematics desirable for advancement.
7. Mental: Must be a competent pressman.
   a. Must be able to think quickly.
   b. Must be a good "detail" man.
   c. Must be fairly analytical.
   d. Must be fairly initiative.
8. Physical condition:
   a. Height: 5 ft. 5 in. or over.
   b. Weight: 135 lbs. or over.
   c. Strength: Medium.
   d. Eyesight: Very good.
   e. Hearing: Good.
   f. Voice: Fair.
   g. Fairly active.
9. General characteristics:
   a. Honesty: Must be honest.
   b. General intelligence: Fairly good.
   c. Personality: Fairly good.
   d. Reliability: Fairly good.
   e. Adaptablity: Fairly good.
   f. Industry: Good.
   g. Attitude: Good.

After drawing up man requirements for a number of jobs, the foremen are ready to proceed to the next topic, the promotion of interest and satisfaction of the man on the job. Here the foreman considers the various factors by which he can make his men satisfied and interested in their work, and by means of a graphical layout he determines the relative importance of each factor.

Promoting Interest Among Workers

At the A. M. Collins Manufacturing Company the foremen were asked to list, in the order of their importance, the various factors that make the worker interested in his work. They presented the following, listed here in the order of importance:

1—Satisfactory wages; 2—Good working conditions; 3—Proper working hours; 4—Giving man a square deal; 5—Taking personal interest in men; 6—Bonus; 7—Proper instruction; 8—Proper discipline; 9—Job pride; 10—Team work; 11—Department pride; 12—Plant pride; 13—Fear.

For the sake of comparison let us present the list of interest factors evaluated by the foremen at the Hammermill Paper Company, in the order of importance decided by the foremen:

1—Desire for gain; 2—Proper handling of men; 3—Giving man a square deal; 4—Proper instruction; 5—Department pride; 6—Team work; 7—Good working conditions; 8—Showing appreciation of effort; 9—Job pride; 10—Proper attitude toward men; 11—Proper discipline; 12—Personal interest in men; 13—Plant pride; 14—Proper promotion; 15—Fear.

An examination of the above classifications brings out one important point: that fear is the least important of all interest and satisfaction factors, and that such human-element factors as proper working conditions, proper instruction, and taking a personal interest in the workmen are of prime importance in the scale.

Analyzing Management Problems

After the foremen attending the conference have properly evaluated the interest and satisfaction factors they are prepared to analyze specific management problems in which these factors are called into play. Here is a typical case presented at the conference:

"A machine operator received orders from his foreman to get out another product on his machine. The plant superintendent afterwards noticed that the workman was running a new product and knowing there was need for the discontinued product, jumped to the conclusion that the workman had changed his product without orders and 'bawled him out.' The workman, knowing that he was only following orders, lost his temper and in turn 'bawled out' the superintendent. The superintendent immediately fired him."

Before undertaking a solution of this problem, the foremen set down the causes of the dispute, first as far as the superintendent was concerned. It was agreed that the superintendent fired the workman for the sake of discipline. The superintendent had injured the self-respect of the worker. There was lack of tact on part of the superintendent. The superintendent jumped to conclusions. As for the worker, he should not have lost his temper.

The problem was then analyzed from the following angles:

What superintendent could have done: He could have stopped the workman, investigated before "bawling him out," and consulted the foreman before "bawling out" the workman.

What workman could have done: He could have told the superintendent of the new order, and told him to go to foreman from whom he had received orders.

Cost factors involved in dispute:

1—Break in a new man on job; 2—Loss of usefulness of foreman; 3—Loss of standing of foreman with his men; 4—Loss of respect of men for superintendent.

After attacking the problem in this manner the logical thing for the foremen to do was now to list practical considerations for firing a man. They asked themselves the question: What factors should a foreman consider in firing a workman? These reasons were stated as follows at the conference:

1—Plant morale; 2—Control costs; 3—Co-operation between superintendent and men; foremen and men; 4—Justice; 5—Man's own welfare; 6—Replacement cost.

Foreman's Co-operation

At least one session of a foreman's conference should be devoted to thrash out the question of how the foreman can best co-operate with the management, with the working men, and with the other foremen. Roughly speaking, there are two kinds of co-operation in a modern, well-organized industrial plant: Vertical Co-operation, by which is meant co-operation between foreman and those executives above him in authority; and Horizontal Co-operation, that is, co-operation between foreman and foreman, that is between persons of equal authority. Under this classification can also be included co-operation with the working force under the foreman.

At the Collins conference it was decided that a foreman can best offer co-operation to the management—that is, vertical co-operation—in the following manner:

1—Giving plant information to workers; 2—Executing orders promptly; 3—Giving proper instruction; 4—Being reliable; 5—Developing job, department and plant pride; 6—Transmitting directions and orders correctly; 7—Selecting help carefully; 8—Keeping up quality and quantity of production; 9—By improving working conditions when possible;

10—Promoting men when advisable; 11—Heading off incorrect gossip; 12—Helping out in emergencies; 13—Boosting; 14—Being loyal, and by inspiring loyalty in others.

The foremen also listed the various ways of co-operating with other foremen and with the working force:

1—Treat other workmen and foremen squarely; 2—Encourage and inspire others to do their best; 3—Help out in emergencies; 4—Keep in close touch with other departments; 5—Give advice tactfully; 6—Take personal interest in welfare of others; 7—Improve working conditions when possible; 8—Arrange work to best interest of all concerned; 9—Be alert to all that may affect the welfare of your department and the plant as a whole; 10—Boost your associates when possible.

Co-operating With Other Departments

The problem of co-operation between a foreman of one department and the foreman of a neighboring department in the plant is a very important one, and should be given due consideration at a foremen's conference.

This phase of co-operation was fully discussed at the foremen's conference at the Bemis Bros. Bag Company plant. It was pointed out at the conference that in order that a foreman can properly co-operate with a foreman in another department he should know something about the workngs of that department. When one foreman fully realizes the difficulties encountered by a foreman in another department with whom he is called upon to co-operate he will make his co-operation more effective. Take for instance, the printing department. This department is called upon to co-operate with all other departments, and vice versa. What do these departments know of the workings of the printing department?

It was agreed at the conference that the manufacturing department should know the following things about the printing department:

1—Capacity of pressroom; 2—Type of equipment; 3—Capacity of each press; 4—Characteristics of each press and pressman; 5—Should be able to recognize quality of printing; 6—Should be notified of breakdown; 7—Should be notified of overtime in pressroom; 8—Should be notified of order in which bags are to be run on press.

The following are the points the Sales Department should know about the Printing Department:

1—How long it takes to do different kinds of jobs; 2—General idea of capacity of each press; 3—General idea of how long it takes to make different kinds of plates; 4—Capacity of press room; 5—What the printing equipment can do; 6—Should be notified in case of delay; 7—Should be able to recognize quality of printing.

Co-operation With Sales Department

Of great importance is the co-operation the department in the factory can give to the sales department. This is a factor that is assuming greater importance every day. Now, what are the things about the Sales Department all the other departments in the factory should know? This question was asked at the Bemis Bros. Bag Company conference. The answer was outlined by the foremen:

1—Problems in connection with temperamental buyers; 2—Some general idea of nature of problems in connection with selling, (a) Short order nature of business, (b) Some idea of service necessary to get large orders; 3—Complaints, (a) Mis-manufacturing, (b) Service and quality.

Another question discussed at this conference was whether a foreman of one department was justified in giving directions to a workman in another department. This, the foremen agreed, was justifiable only where an emergency exists, such as accident, fire or destruction of property, and in the case of a minor job where a workman would not have to leave his place of work.

"This case caused considerable discussion," commented the leader of the conference, "as to who should be the judge of how important the job might be that the workman was being requested to do. The group agreed that the directions should be given to the workman only in case of absence of the workman's foreman and that the job the workman was being given to do is a comparatively unimportant one and does not require the workman to leave his place of work. Even then it was agreed the workman had the privilege of refusing to do the job without going outside his rights."

* * *

Solving the Foremen's Safety Problems

IT IS now generally recognized that the foreman is the biggest factor in the elimination of accidents in the plant. No matter how effective the safety precautions introduced in the plant by the management, the first and most important requirement is that the supervisory force lend its intelligent co-operation to properly interpret these precautionary measures to the working force. Therefore, the subject of accident prevention and safety measures is always a part of a well organized series of foremen's conferences.

As the causes of accidents are not always direct, being attributed to such factors as improper supervision, improper instruction of the workman in his duties, unsanitary working conditions, and the home life of the worker as well as factory conditions, the

subject of accident prevention is a very complex one indeed.

The foreman already having taken up the principles of job analysis and the man requirements for the specific job, and having discussed the principles of proper job instruction, he has now come to realize that one way to prevent accidents in the plant is to properly interpret those job operations that in his judgment are exposed to accident risk.

The Man Element in Safety

However, accidents can only partly be attributed to the machine. A most important factor is the man element, and this element should be thoroughly discussed by the foremen. It is reduced in terms of the worker's physical condition and his home life. Having studied this element, the foreman takes it up in terms of the job and the plant conditions.

The first step is for the foremen to discuss physical requirements of each job. The foremen set a standard of physical requirements for the particular jobs. The leader then introduces a question like the following: "By virtue of his relations to his men, what can a foreman do in connection with the physical condition of his men that nobody else can?" Another question may be supplemented, such as, "How can a foreman co-operate with a medical department to the best advantage?" This latter is an important question, as some of the larger concerns, such as the A. M. Collins Company, maintain medical departments and dispensaries, with a nurse and doctor to look after the health and physical condition of the employees. In such plants first-aid instruction, as a rule, is given to the employees.

After putting such questions and leading the discussions, the leader then presents some typical cases for further discussions, to produce the necessary conclusions. Let us reproduce here some of the cases introduced at the foremen's conference held in Baltimore:

"A good worker is known to be in the habit of sitting up till three o'clock two or three nights a week playing poker. This is interfering with his work because he has not enough sleep. As a result he is careless and his work falls off. Is this any business of a foreman or is it the man's own business? Can anything be done in such a case except discharge or lay off?

"In the case just given the foreman takes the matter up with the man in a decent way and the man feels that as it is on his own time it is nobody's business except his own. If the man is a good enough man and he is to be saved to the plant, how could such a case be handled?

"How far should a foreman go in equipping himself to give treatment in the following cases: slight burns, slight cuts, particles in the eye, heat prostration; or should he make it a rule to send all cases, no matter how trivial they may seem, to the doctor at once, even if the men themselves protest?"

After such cases as these have been discussed, the foremen begin with actual accident cases to determine and classify the causes of each. After the presentation of cases, the foremen compress their observations into definite conclusions: apparent carelessness, temporary carelessness and permanent carelessness. Each classification is illustrated with a case. Thus, to illustrate apparent carelessness, was introduced the incident of the failure of a bank in which the workers in the plant kept their savings, and that as a result the men suffered under a nervous strain all day, and more accidents than usual happened that day.

Foreman Analyzes Accident Causes

The foremen are instructed to carefully analyze each accident, by investigating the cause, deciding upon a method to dispose of the case, taking steps to remove the cause and to prevent its occurring again. In the case of the Baltimore conference, the foremen analyzed a number of cases, and catalogued the following causes:

Apparent Carelessness is due to ignorance, lack of proper instruction, man in wrong kind of work, lack of previous experience, unavoidable circumstances, and careless attitude on part of the management.

Temporary Causes—Mind preoccupied, worry, in too much of a hurry, sickness, routine work, lack of interest, overworked, shop ventilation, shop illumination, over-confidence.

Permanent Causes—Bullheadedness, indifferent, deliberate disobedience, bad health, absentmindedness, low mentality, domestic troubles and physical incapability.

The foremen then discussed how to remedy these conditions. At the conclusion of the session the foremen agreed on the following points:

"It was agreed that better co-operation and more intelligent and careful work would be done if the dangers of a job were made known to the workman when he was hired. These should, however, be given a straightforward, business-like manner so as to give him confidence and not instill a feeling of excessive fear. Several examples were given of accidents occurring on account of the person being afraid of the job. This brought up the point that a foreman should carefully select his men for the more dangerous jobs.

"The discussion also brought out the fact that fewer accidents occur when a personal mind is keen and active. Routine work is what usually dulls the senses and lulls the worker into a semi-conscious condition so that accidents are more liable to occur. On work of this type the foreman should supervise very carefully and use devices which will keep the worker alert."

Solving the Man Factor

It is apparent that in analyzing accident causes and prevention the foremen should first give careful attention to the man factors involved. After they have studied the man and machine factors the foremen at the conference are prepared to take up a number of typical cases of accidents and carelessness and discuss them from all angles.

At the A. M. Collins conference the leader worked out a special form for analyzing the physical condition of the working force as regards factory accidents. The form was put on the blackboard as follows:

The Problem	Cost Factors	Ways and Means of Dealing with Problem
To promote good health and physical condition	1. Injury to self	1. Selection and accident prevention work. Safety first
	2. Injury to tools and equipment	2. Proper instructions
	3. Injury to fellow workers	3. Appeal to sense of justice
	4. Slowing down production	4. Show effect of one man's work upon department
	5. Quality reduced	5. Appeal to job pride
To avoid injury	6. Compensation	6. Money will not replace physical injury
	7. Turn-over	7. Hazards from worker's standpoint

However, the most interesting part of a foremen's conference on accident prevention is the discussion based on actual cases. At the foremen's conference at the Gardner & Harvey Company, twelve cases, in the form of questions, were put to the foremen, and each question discussed fully by the men. To show how this has worked out, the writer will state the twelve questions, along with a summary of the discussion by the foremen. Here is the first question:

Safety Signs

1. "Careful suggestions continually conveyed to the worker in respect to all matters which affect his safety will do more to educate him along lines of carefulness and safety than any other form of propaganda. Do you agree with this statement?"

Of the four foremen discussing this question, two believed that safety signs were better than mere suggestion. Mr. Rupp, the employment manager, favored safety signs, while Mr. Tom Harvey, mill manager, maintained that suggestion was the more forcible. "You can post all the bulletins you like," Mr. Harvey argued, "if they do wrong and you call them for it, they say they did not see the bulletin, where, if you tell them, you know you tell them and they have no alibi."

2. "Familiarity breeds contempt. Is this a true statement?"

"In my work on safety," said Mr. H. MacDonald, plant chemist, in discussing this question, "I have got to a state where if I just hear a pair of gears running, I jump. Cannot safety be carried so far as to produce fear instead of carelessness?"

Mr. B. M. Bishop, superintendent of No. 2 mill, remarked: "I was always a good climber, could walk around the edge of a building with no fear at all, but a short time ago I fell from a shaft just 3½ feet high, and I know I could not now walk around a building or anything of any height; afraid I'd fall."

Mr. Tom Harvey said: "I think people that are afraid should not walk around machinery. I do not think people are to blame for being scared—it is no disgrace to say he is scared, but when they are scared they should stay away from machinery."

Mr. Bishop (addressing Mr. MacDonald): "Do you think, MacDonald, if you would continually hold before that man's mind the fact that he might get his fingers caught in a calender and what might result in a moment of carelessness, would it make him nervous if you would make a safety campaign and by careful talking aim to produce a careful man?"

Mr. MacDonald: "I think it would."

Mr. R. Boggs, foreman of No. 1 power plant, concluded, "I think it depends on the individual."

3. "A machine tender was washing felts and during the washing he put coal oil on them to get the grease spots out of them. When he started, the paper again stuck to the first press. It was three hours before he could get the paper over the first press, and he had to wash the felt again to get the coal oil out of the felt."

The foremen stated that the tender was careless in getting grease spots on his felts, and even if he did not get the spots on he should know better than to use coal oil. He showed lack of knowledge.

4. "A train stopped between stations and the trainman was told to 'go back a ways' and flag the next train. He did not know that it requires a certain distance to stop a train."

A foreman classified this negligence as criminal.

Unguarded Machines

5. "A safeguard was removed to repair a certain machine. The workman knew that it was removed. His duties required that he work around that particular place; an hour or so after the safeguard was removed he put his hand where the safeguard had been. There being no safeguard there, his hand was drawn into the machine."

In commenting on this case, Mr. Harvey said: The more I work around machinery, I cannot understand how it is that so many of us are careless about safeguards, when we know a thing can be made safe and delay it so."

"Take that elevator over at the Gardner-Harvey," commented Superintendent Rettig. "It is used all day long taking stuff up and down, wood pulp, news, etc., and it is impossible to keep it locked. If someone is hurt, are we responsible?" "If you are going to use the elevator all day," Mr. Harvey countered,

"you should put a man there to run it. Have one of Jake's men there to run it." "I think we should have a man right on the job to run the elevator while we are so busy," concluded Foreman A. VanKirk.

6. "An oiler let one of the bearings run hot. A workman near the paper shredder told the oiler the bearing was hot. The oiler said, 'I don't care a damn.' In a short time the paper was on fire traveling up the elevator. What kind of carelessness is this?"

This case the foremen classified as permanent carelessness.

7. "Upon the leader of a department rests the chief responsibility for the safety of the workers in that department. What do you say?"

Mr. Harvey commented: "When the superintendent gives the foreman the key, he is responsible until he gives the key back to the superintendent. The man holding the key should be responsible. The mill superintendent should select the man to handle the key."

8. "There are two ways to handle carelessness: (a) Wait till something happens; (b) plan some way to prevent its happening."

Comment by Mr. Harvey: "Sometimes you cannot see a dangerous place until something does happen. This is the way most of our accidents happen. The State Inspector inspected one of our elevators and in less than a week later somone was killed on it. It was faulty construction of the elevator in the first place. I blame the State Inspector as much as anybody—he should have noticed it. The elevator was built faulty."

Causes of Carelessness

9. "What are some of the causes of carelessness on the job?"

The foremen classified the causes as follows:

1—Carelessness; 2—Overzealousness; 3—Laziness; 4—Fatigue; 5—Overconfidence; 6—Defective equipment; 7—Poor light; 8—Horse-play; 9—Haste; 10—Lack of experience; 11—Unguarded machinery; 12—Unsuitable clothing; 13—Taking chances: (a) necessary; (b) unnecessary; 14—Physical defects; 15—Poor health; 16—Slippery floors; 17—Untidiness; 18—Visitors; 19—Excitement; 20—Fire; 21—Absent-mindedness; 22—Poor judgment; 23—Fate.

Means of preventing accidents were listed by the foremen as follows:

1—Guard equipment, (a) ladders, (b) buildings, (c) trucks; 2—Be careful; 3—Instruct help; 4—Good light; 5—Tidiness; 6—Live boss; 7—Education on safety; 8—Think safety; 9—Keep floor and machinery clean; 10—Keep tools in good condition; 11—Safety signals; 12—Plant bright.

10. "This happened in the liquor room: A man dropped a chunk of lime into the boiling caustic soda, which made it very explosive. The boiling caustic soda ran on his foot and burned it severely. Man laid off. What kind of carelessness was this?"

"If a man is careless in his manner," one of the foremen commented, "you would think he had some knowledge but did not use his knowledge and you could not call him ignorant."

11. "The machine tender, in forming a sheet, had a good stock but did not form the sheet because the sheet not formed properly will run safer than one formed properly and make him less trouble. What kind of carelessness was this?"

"I do not think that this is a case of carelessness at all," said Mr. George Harvey, manager of Mill No. 1. "I think it might be a case of mistaken judgment whether it is the best thing to do. The machine tender has to very often use his judgment. It very often comes up that bad paper is made on account of the machine needing washing, and in his judgment he thinks the best thing to do is to shut the machine down and wash it."

12. "Bill Jones, in calipering paper, would not read the micrometer correctly. What is wrong with Bill? What kind of carelessness?"

With the discussion on the last question was ended up the session on carelessness.

Compensation Never Compensates for This

Judson G. Rosebush, general manager, Northern Paper Mills, Green Bay, Wis., told a story at the National Safety Congress, in Cleveland, of an accident which recently happened to Paul Couvillion, one of their plant engineers.

"Passing through a machine room, he was feeling the bearing of an engine for heat. He lost his balance for an instant and the third finger on his left hand paid the penalty.

"A few days after his return to the mill, our personnel man and the oiler were greeting him. The oiler, trying to afford Paul a crumb of comfort, remarked: 'It is a good thing it was your left hand, Paul.'

" 'Yes, I suppose I ought to be glad of that,' was the reply.

"The personnel man thought to add a word. 'And, Paul, a man can spare a finger better than a thumb.'

"Paul was silent for a moment. Then a peculiar mist gathered in his eyes. 'Thank you, boys, but—good-bye, old violin.'

"The personnel man understood at once. Paul has had a reputation as a musician as well as an engineer. And to the violinist, the third finger of the left hand is indispensable.

"The legal compensation for injury does not really compensate the injured. The legislatures and the courts have decided what a finger is worth, what a leg is worth, what an eye is worth and what a life is worth from an industrial standpoint, but never does that compensation measure the loss that comes to the violinist because he can never play the violin as before."

Pointers for the Engineer

By W. F. SCHAPHORST, M.E.

Standard Pipes for Columns

STANDARD pipes often come in handy around the paper mill for use as columns or struts or for use as "push members" in transmitting forces. This is because a pipe is strong both in tension and compression. Due to its circular form, it is ideal for resisting compressive forces.

When it comes to "figuring columns," however, it often takes considerable time digging around in handbooks, etc., and as a result the use of a pipe is avoided. Or, a pipe much too large or too small is used, chosen entirely by "guess." The pipe that is too small may fail and be the cause of an accident. It is always best, of course, to be on the safe side, but at the same time one should practice economy.

To assist those who may have occasion to use standard pipes in this way, and to make it as easy as possible for them, I have worked out the following simple tables and rules:

1—Knowing the load that is to be carried and the length of pipe needed, make a "guess" as to the size of pipe. Column A in the tables will help in making the guess, as it gives maximum length of pipe that may be used. Thus, never use a ⅛" pipe as an important column, longer than 14.5". Never use a 3" pipe as an important column, longer than 139", etc.

2—Multiply the length of the pipe in inches by the corresponding figure in column B of the table. This product should never be greater than 12,000. If it is greater than 12,000, it means that you have guessed a pipe that is too small. After getting the right size, proceed as follows:

3—Subtract the product from 19,000. If the difference is equal to or less than 13,000, use it in (4). If the difference is more than 13,000 use 13,000 in (4).

4—Multiply by the figure in column C, corresponding with the pipe size.

The result is the number of pounds that the pipe will carry as a column, strut, or "push member." If the result is less than the load to be carried, try again, using the next larger pipe size, and so on until the proper and most economical size is selected.

Size of Pipes, Inches	Column A Max. Length, Inches	Column B	Column C
⅛	14.5	826.4	0.07
¼	19.4	617.3	0.12
⅜	25.	480.8	0.17
½	31.3	383.1	0.25
¾	40.	300.3	0.33
1	50.6	237.5	0.50
1¼	64.7	185.5	0.67
1½	75.	160.5	0.80
2	94.7	126.9	1.07
2½	114.	105.3	1.71
3	139.	86.21	2.24
3½	161.	74.63	2.68
4	181.	66.23	3.18
4½	202.	59.52	3.68
5	226.	53.19	4.32

For example, it is desired to support a load of 10,000 lbs. at a height of 84". What size of pipe should be used? Following the rules, we do this:

(1) "Guessing" the size of pipe, column A shows that 84" falls between 1½ and 2" pipe. We will therefore try a 2" pipe.

(2) $84 \times 126.9 = 10{,}650$. This is less than 12,000 and we will therefore continue.

(3) $19{,}000 - 10{,}650 = 8{,}350$. This is less than 13,000 and we may therefore use it in (4). If the difference were 18,350, we would have to use 13,000 in (4).

(4) $8{,}350 \times 1.07 = 8{,}950$ lbs.

Since 8,950 lbs. is less than 10,000 lbs., a 2" pipe is too small. We will therefore recalculate, this time trying a 2½" pipe.

(2) $84 \times 105.3 = 8{,}850$.
(3) $19{,}000 - 8{,}850 = 10{,}150$.
(4) $10{,}150 \times 1.71 = 17{,}370$ lbs.

This shows that a 2½" pipe would be amply safe to hold up 10,000 lbs. It shows that a 2½" pipe is capable of holding almost twice as much as a 2" pipe at a height of 84". The small difference in pipe sizes and the great difference in strength indicates the necessity of careful computation and the danger involved in guesswork.

For the benefit of those who wish to check up the truthfulness of the foregoing rules, I will state that they are based on the so-called "American Bridge Co. formula," which is:

$$S = 19{,}000 - 100 - \frac{1}{r}$$

Where S = permissible unit stress in lb. per sq. in. — 13,000 lbs. per sq. in. being the maximum.

1 = length of column in inches;

r = radius of gyration in inches.

These factors are all simple enough for the average engineer who is accustomed to formulas, with the possible exception of the radius of gyration. It is always bothersome to the writer to have to look up formulas on radius of gyration and no doubt is so considered by others also. I have therefore compiled a table giving the radius of gyration of all standard pipe sections from ⅛" to 5". I do not find these

tabulated in any handbook and therefore computed them from the formula for concentric sections, such as a pipe section, namely:—

$$r = \frac{\sqrt{D^2 + d^2}}{4}$$

The cross-sectional area of metal in standard pipes can be found in handbooks, but for the sake of completeness I am also giving areas in the table below. With these figures one can quickly compute or check any standard pipe column up and including 5 inches:

Size of Pipe Inches	Outside Diameter Inches	Inside Diameter Inches	Radius of Gyration	Cross-Sectional Area Sq. Ins.
⅛	0.405	0.27	0.121	0.07
¼	0.540	0.36	0.162	0.12
⅜	0.675	0.49	0.208	0.17
½	0.840	0.62	0.261	0.25
¾	1.05	0.82	0.333	0.33
1	1.315	1.05	0.421	0.50
1¼	1.66	1.38	0.539	0.67
1½	1.9	1.61	0.623	0.80
2	2.375	2.07	0.788	1.07
2½	2.875	2.47	0.95	1.71
3	3.5	3.07	1.16	2.24
3½	4.	3.55	1.34	2.68
4	4.5	4.03	1.51	3.18
4½	5.	4.51	1.68	3.68
5	5.563	5.05	1.88	4.32

For example, using the formula in place of the preceding rules and tables and applying it to the same problem, it becomes necessary to "guess" just the same, formula or no formula, on account of the $\frac{1}{r}$ ratio (known as the "slenderness ratio") and on account of the nature of the formula and the condition that 13,000 lb. per sq. in. is the maximum allowable unit stress.

Just to check up the table and rules let us make a guess this time that a 2½" pipe will do the trick.

Then, our table shows that r for a 2½" pipe = 0.95", whence substituting in the formula:—

$$S = 19{,}000 - \frac{100 \times 84}{0.95} = 10{,}150 \text{ lb. per sq. in.}$$

This, it will be noted, is the same as the result given by "item 3" above.

Then, multiplying by the cross-sectional area of the pipe in square inches, which in this case is 1.71 sq. in., we get: $10{,}150 \times 1.71 = 17{,}370$ lb.

Does Clean Steam Cut Metal?

DEFINITE information seems to be lacking as to whether or not pure steam under high pressure will cut metal.

It is well known that "impure" steam will cut valves severely where pressure is high and where the valve opening is so small as to give what is known as "wire-drawing." According to some authorities this cutting is due to solids carried over in the moisture and is NOT due to the steam or the water carried with the steam. It is also well known that steam turbine blades are liable to erode badly with moist steam. By removing the moisture from the steam immediately after it leaves the boilers it has been found that turbine blades will last much longer. For example, in one power plant the turbine blades were so much eroded as to become practically useless after a run of 1,100 hours or less than 42 continuous days, using the steam without first purifying it. But after reblading the turbines and making provision for removing all moisture the turbines now give no trouble after four years of service.

The unqualified statement is still commonly made by some engineers that "high pressure steam cuts metal." They do not specify whether or not the steam is pure. I am not absolutely certain about it myself as I have never seen results of special tests and have been unable to learn of any. I believe such tests have never been made.

Does highly compressed air cut metal? I have never heard or read of ordinary compressed air cutting valves. No doubt this is because compressed air carries very little, if any, impurities with it. There is no question but that if gritty particles were permitted in with the air it, also, would cut. I know that water under very high pressure will cut metal, but that, again, is probably due to solids in the water.

Value of Suggestions

AN INTERESTING article appeared in a recent number of the Saturday Evening Post concerning suggestion systems which are being employed by large industrial concerns today. All employees are invited to drop suggestions in boxes that are provided in several places about the plant. Every suggestion is considered and those that are adopted are paid for. It has been found that the suggestion system is decidedly profitable. For example, one large company mentioned in the article considered over 12,000 suggestions and adopted over 3,000. The amount of money paid for each suggestion averaged nearly $13. It is estimated that each suggestion in 1924 effected an average saving of over $130. Thus the amount paid per suggestion is about 10 per cent of the estimated annual saving. The savings during 1924 alone were figured at over $400,000.

Poor distribution of natural light is usually due, not to lack of windows so much as to neglect of cleaning and failure to utilize the reflecting power of paint. Clean windows, walls painted white and keeping them clean pays big dividends for the time and money expended.

ACCIDENT RECORD OF PAPER MILLS ENTERED IN "THE PAPER INDUSTRY" LOVING CUP CONTEST

MILL	COMPANY	No. of Employees	Hours Worked	No. of Accidents	No. of Days Lost	Frequency Rate	Severity Rate	Equalization Factor	Equalized Rate
Ft. Edwards, Wis.	Nekoosa Edwards Paper Co.	789	207980	0	0	0.	0.	2.58	0.
Niagara, Wis.	Kimberly-Clark Co.	620	132762	0	0	0.	0.	2.53	0.
Kimberly, Wis.	Kimberly-Clark Co.	800	201900	0	0	0.	0.	2.35	0.
Niagara Falls, N. Y.	Kimberly-Clark Co.	458	109560	0	0	0.	0.	2.32	0.
Menominee, Mich.	Marinette & Menominee Paper Co.	193	33503	0	0	0.	0.	2.24	0.
Marinette, Wis.	Marinette & Menominee Paper Co.	292	51187	0	0	0.	0.	2.21	0.
Niagara Falls, N. Y.	Defiance Paper Co.	141	31056	0	0	0.	0.	2.13	0.
Port Angeles, Wash.	The Paraffine Cos., Inc.	250	42576	0	0	0.	0.	2.00	0.
Green Bay, Wis.	Fort Howard Paper Co.	226	48515	0	0	0.	0.	1.99	0.
Woronoco, Mass., No. 2.	Strathmore Paper Co.	147	31583	0	0	0.	0.	1.99	0.
Mittineague, Mass., No. 1	Strathmore Paper Co.	138	28329	0	0	0.	0.	1.99	0.
Chillicothe, Ohio.	Chillicothe Paper Co.	103	22646	0	0	0.	0.	1.99	0.
Emeryville, Calif.	The Paraffine Cos., Inc.	88	19776	0	0	0.	0.	1.99	0.
Sumner, Wash.	The Paraffine Cos., Inc.	78	17546	0	0	0.	0.	1.99	0.
Mittineague, Mass., No. 2	Strathmore Paper Co.	60	11028	0	0	0.	0.	1.99	0.
Lincoln	Lincoln Pulp & Paper Co., Ltd.	46	10169	0	0	0.	0.	1.99	0.
Sault Ste. Marie, Ont.	Lake Superior Paper Co., Ltd.	701	167128	3	20	17.94	.119	2.71	.044
Grand 'Mere, P. Q.	Laurentide Co., Ltd.	805	168387	2	26	11.90	.154	2.56	.060
Chillicothe, Ohio.	Mead Pulp & Paper Co.	554	125000	1	17	8.00	.136	2.12	.064
Espanola, Ont.	Spanish River Pulp & Paper Mills, Ltd.	568	117799	1	19	8.50	.161	2.47	.065
Middletown, Ohio.	The Gardner & Harvey Co.	511	123677	3	16	24.29	.129	1.99	.065
Tyrone, Penna.	West Virginia Pulp & Paper Co.	611	129838	3	18	23.25	.139	2.08	.067
Powell River, B. C.	Powell River Co., Ltd.	885	186496	5	39	26.79	.209	2.51	.083
Sturgeon Falls, Ont.	Spanish River Pulp & Paper Mills, Ltd.	436	93772	1	20	10.67	.213	2.34	.091
No. 1	Co. A.	113	70512	1	14	14.18	.199	1.99	.100
York Haven, Pa.	York Haven Paper Co.	282	67823	2	16	29.49	.236	2.27	.104
Pyrites, N. Y.	DeGrasse Paper Co.	412	93101	4	27	43.00	.291	2.27	.128
Los Angeles, Calif.	The Paraffine Cos., Inc.	168	35139	1	9	28.57	.257	1.99	.129
Berlin, N. H.	The Brown Co.	875	504000	14	180	27.81	.357	2.77	.129
St. Francis, P. Q.	Canada Paper Co., Ltd.	205	40910	1	19	24.44	.464	2.64	.176
Troy, N. Y.	John A. Manning Paper Co.	267	55536	3	24	54.01	.432	1.98	.217
Bogalusa, La.	Bogalusa Paper Co.	602	187824	12	109	64.10	.581	2.47	.235
No. 1	Co. B.	1000	217583	7	120	32.29	.553	2.31	.239
Ladysmith, Wis.	Great Western Paper Co.	281	59642	3	34	50.33	.569	2.32	.245
Plainwell, Mich.	Michigan Paper Co.	279	59312	4	30	67.48	.514	1.99	.258
Lybster	Lincoln Pulp & Paper Co., Ltd.	73	16438	1	9	60.76	.548	1.99	.275
Woronoco, Mass., No. 1.	Strathmore Paper Co.	104	18518	2	12	107.81	.649	1.99	.326
Antioch, Calif.	The Paraffine Cos., Inc.	270	56448	5	36	88.58	.673	1.99	.338
Windsor, P. Q.	Canada Paper Co., Ltd.	144	35470	2	36	57.79	1.015	1.99	.510
No. 1	Co. C.	1183	260471	4	358	15.32	1.372	2.63	.522
Sulphite	Lincoln Pulp & Paper Co., Ltd.	87	19953	2	27	100.50	1.352	2.49	.543

Editorial Comment

By WILLIAM SIBLEY

Promoting Thrift Among Employees

STATISTICS show that the period of greatest productivity for the average man is between the ages of 30 and 55. Unfortunately, the average man fails to provide for the years of low productivity, with the result that many, at the age of 65, are again quite as dependent as they were at the age of 15.

Much of this inadequate provision could be remedied if salaried employees could be taught the value of planned expenditures. Poverty comes not so much from spending all of one's salary as it does from unwise expenditure. Rigid adherence to a carefully worked-out individual budget will bear savings-bank fruit in astonishingly brief time. It is, of course, quite impossible to formulate budgets for all employees or all conditions. Too many considerations are necessary to permit of an inflexible system. The type of individual, location of the plant, available facilities and existing conditions are governng factors. Tentative budgets have been prepared, however, with some degree of success. Some firms have been using these with a gratifying degree of response from their employees.

The writer recently visited a large industrial plant in Cleveland, where they have employed this idea, with some expansion, to distinct success. Budget forms are printed on the backs of the pay envelopes and serve as a constant reminder to the men of the necessity for strict adherence to a definite plan. This firm enters into an agreement with any employee wishing to so bind himself that they will give $500 to any employee who can show a savings account totaling $1000 which has been accumulated out of actual earnings. This $500 is given, however, with the stipulation that the entire $1500 will be spent in the purchase of a home. The budget this firm used is as follows:

Single Person

Board and lodging, including lunches and car fare	50%
Clothing, including laundry, pressing and repairing	20%
Recreation, education and advancement	15%
Savings	10%
Incidentals	5%

Family Budgets

Food	20%
Shelter, including taxes, rent, interest on mortgage, upkeep of home, etc	20%
Maintenance, including running expense, gas, service, electricity, etc	15%
Clothing	17%
Recreation and advancement, including church, charity	13%
Saving	10%
Miscellaneous	5%

It is interesting, as a side-light on the success with which this firm has met in carrying forward this plan, to find that they have assisted in the purchase of more than 200 homes and that since the inauguration of this plan their labor turn-over has decreased nearly 75 per cent. The management believes the $500 bonuses for assured savings is an expenditure much less than would be required to hire and train new men under the old, high turn-over system.

Our Most Influential Agency for Good

ALTHOUGH it may be said that the Red Cross movement had its origin in the Battle of Solferino, in the Italian War of 1859 (the movement growing out of Henry Dunant's book, Un Souvenir de Solferino), it remained for Miss Clara Barton to successfully interest President Garfield and James J. Blaine, then Secretary of State, in the ratification of the Treaty of Geneva. Official ratification was not made, however, until 1882, when Chester A. Arthur had succeeded to the Presidential Chair, following the assassination of President Garfield. Immediately upon formal adhesion to this compact, "The American Association of the Red Cross" was incorporated under the laws of the District of Columbia, with Miss Barton as its president.

The American Red Cross is the only volunteer society authorized by the Government to render aid to its land and naval forces in time of war. The charter of the Red Cross defines its purposes as: "—to furnish volunteer aid to the sick and wounded of armies in time of war; to act as a medium of communication between the people of the United States and their Army and Navy; to continue and carry on a system of national and international relief in time of peace, and to apply the same in mitigating the suffering caused by pestilence, famine, fire, floods or other great national calamities and to devise and carry on means for preventing the same."

As a governing body, the American Red Cross has a Central Committee. This is composed of eighteen members, six of whom are elected by the Board of Incorporators, six elected as representatives of Chapters, and six appointed by the President of the United States. The latter six are usually made up of representatives of the Departments of State, War, Navy, Justice, Commerce and the Treasury. According to the by-laws, the President of the United States is always president ex-officio of the American Red Cross.

During the late World War, the American Red Cross organized and completely equipped 54 base hospitals, each with a bed capacity of 1,000; 19,877 nurses were assigned to active military duty, more than 10,000 of whom served overseas. In domestic cantonments they served refreshments 40,000,000 times to troops in transit, and 15,376,000 times to soldiers in France. In the United States, during the

—— on Timely Subjects

war period, they provided financial assistance and other forms of social service to more than 500,000 families. All of this service cost the Government not a penny.

Now, the American Red Cross is back at their peace time work of giving assistance to suffering humanity —stamping out contagious disease—teaching sanitation and health—and rendering relief to the unfortunate victims of disaster. To help carry on this work they are going to ask you, the week of November 11th, for one measly little silver dollar. What are you going to do about it?

Sometimes Our Sympathies Are with China

YOU probably won't believe this editorial, but read it anyway. It gives a few interesting side-lights on why the Chinese resent the presence of foreigners. While reading, it is well to keep in mind the fact that in China, Americans are foreigners.

We sometimes wonder why China is continually in a state of chronic insolvency. There are several reasons for this, one of which is:

China is the greatest potential market for international trade on the globe. Her rich mineral deposits, her forests, her water power, indeed, her every natural resource is virtually in a virgin state. This undevelopment attracts the foreign industrialist who sees the possibilities of developing railways, mines and manufacturing plants—with the view, naturally, of eventually controlling them. This is the usual procedure: Promoters or representatives first sell the idea to wealthy Chinese. Then they get the Chinese to borrow large sums of money for the development of the project, always with the stipulation that the creditors shall have a share in the management. When financial troubles arise (and these are frequently manipulated) and the Chinese are unable to meet their obligations, the project, as a matter of course, reverts to its creditors.

The Han-yeh-ping Iron and Steel Company in Hankow, for instance, is now dominated by Japanese. Since assuming control, pig iron and ore up to a specfied amount is sold to the Imperial Works in Japan at much below the market value. The result of multiplying such instances has made the Chinese wary of foreign enterprise, and has given them a preference for letting opportunities slip by and letting their mineral wealth lie fallow, than become involved with the risky foreigner.

Under the existing treaties China has no power to determine her own tariff. The uniform five per cent ad valorem duty on all goods was fixed by foreigners many years ago and has since remained in force. This, in spite of the sharp advances in world prices of practically all commodities. The existence of this low tariff makes it impossible for the native, on his own soil, to compete with the foreign importer.

All Chinese harbors are leased to foreign powers —the leases compelled in times past at the point of a bayonet. Today there is no harbor or port in the 300 miles of Chinese coast line in which China could mobilize her ships.

Shanghai is the most uniquely governed city in the world. It is jointly owned by every country in the world but China. It was established about eighty years ago by a few British traders sailing up the Whangpo. Rapidly it became a large foreign settlement and during the Civil War Americans took their place among others at this point. The Chinese government was compelled, by force, to yield virtual ownership of the land to the foreigners, who had by that time inaugurated courts and set up a municipal council according to Western custom. Last year's census showed the foreign population, including Japanese, Siamese, Indians, etc., as well as the white races, to be 21,657. The Chinese numbered 827,932. This is a ratio of about 40 to 1 in favor of the Chinese —who own most of the property of the settlement, conduct the bulk of the retail business, and pay nearly 75 per cent of the taxes of that settlement. Yet these 800-odd thousand Chinese, which includes ex-ambassadors to foreign cities, statesmen, wealthy graduates from Oxford and Yale, have no vote and are not represented in the municipal government. Over the entrance to one of the parks (in which nightly band concerts are given at the expense of the tax-payers) there is a sign: "Dogs and Chinese not allowed." Perched over the entrance of a second park is a second sign, which reads: "This space is reserved for members of the foreign community."

The Washington Conference promised China that she could raise her customs tax from five to seven and one-half per cent. This promise, with others, has never been realized, because the Nine-Power Pact has never come into being through the lack of ratification by France. This procrastination has done nothing to allay the suspicions of the Chinese for all foreigners.

Not long ago an American representative of a large newspaper asked a prominent Chinese patriot: "Is China on the verge of another Boxer outbreak?" to which question came the reply: "Unless the foreign powers change their policy toward China, a new Boxerdom is sure to come sooner or later, and when it does come it will be something compared to which the recent earthquake in Japan will be a very small affair."

There are 115 automobile manufacturers in the United States. Fifteen of them do 90 per cent of the business.

Whether to buy power or to generate it is a matter of extreme importance to some paper and pulp manufacturers. This question should be reviewed every year or two, for many factors may change in a short time and alter conditions materially. What may be best at one time may not be best at another.

Fourteenth Annual Safety Congress

Pulp and Paper Section Hold Enthusiastic Meeting in Cleveland, September 29 to October 1, 1925

CROWDED rooms greeted the high grade program prepared for the members of the Paper and Pulp Section at the fourteenth annual congress of the National Safety Council, held in Cleveland, Ohio, September 28th to October 2nd. Representatives of paper mill safety work came from North Carolina, Ontario, Wisconsin and Massachusetts Bay to the meeting. The membership of the section turned out in force to hear the very evenly balanced group of papers arranged by a highly efficient program committee headed by W. J. Peacock, personnel man of the Northern Paper Mills, Green Bay, Wisconsin. The caliber of the program was high, the variety of subjects treated in the papers was wide, and the discussion which followed each paper was brisk and brought out salient points in the various subjects with additional clarity. As a whole and quite aside from the most admirable even level of excellence maintained throughout the three days' offerings, the program was the thing—it went with real punch.

W. J. Peacock, secretary, and M. G. Hoyman, chairman of the section, stood up at the luncheon and tried to confer on each other the credit for the success of the year's work, but it was apparent to all interested in the work of the section that some very fine teamwork had been in progress and that the honors were very evenly divided.

Inspired by the record established by the section in producing sixteen mills, which brought to the decision of THE PAPER INDUSTRY Cup Contest, safety records devoid of accidents in August, the section resolved at the luncheon to challenge any other section of the National Safety Council to a contest for the determination of the safest section. The Paper and Pulp Section feels that the inspiration of the new contest inaugurated by THE PAPER INDUSTRY for the first six months of next year, coupled with the splendid work being done by various members of the section, gives the section the right to make this challenge on a sound basis of proven performance. It was announced informally at the meeting that the Port Edwards mill of the Nekoosa-Edwards Company is now in its one hundred and eighty-eighth day of complete safety and the Nekoosa mill in its hundred and second day of complete safety. The Kimberly mill of the Kimberly-Clark Company went through one hundred and fifty days of complete safety—its perfect month in August coming near the end of this splendid run. Many of the mills whose records showed one or two accidents would in the long pull of six months or a year be valuable contributors to a high grade safety record, and the section felt itself justified in making this challenge, which was done by formal resolution.

Interest and a high spot for the three days' program was provided at the luncheon Wednesday when W. J. Peacock drew the attention of the representative of THE PAPER INDUSTRY to the fact that there might be somebody to lick after the announcement of the decision on the cup contest, and invited all interested to stand up and be looked over. It was the representative's good fortune to be able to present the cup to the biggest man in the room, F. H. Rosebush, safety man for the Nekoosa-Edwards Paper Company, Port Edwards, Wis., who for some time thereafter was also the most disconcerted man in the company, for while he knew his record was good it had been successfully concealed from him just how good.

The presentation of the cup was accompanied by the reading of the following communication from the publisher of THE PAPER INDUSTRY, the donor:

Loving Cup Contest

"A majority of the membership of the Paper and Pulp Section was interested in the competition for the loving cup offered by THE PAPER INDUSTRY of Chicago, for the mill in the membership of the National Safety Council who had the best accident record during the month of August. A majority of the members of the council entered this contest, but only 41 mills sent their accident records. Every one of these companies made a good showing.

"Realizing the great benefits that have come out of those contests conducted by individual companies between their own mills, the publisher of THE PAPER INDUSTRY of Chicago initiated this contest in order to stimulate an interest among a great number of mills to compete with each other, and the result is gratifying.

"The National Safety Council consented to supervise the contest, and the results have been determined by their usual method of rating.

"The effects of the contest were an excellent reaction in all of the mills that entered. Here was an opportunity to win something tangible and to have permanent possession of something beautiful that both executives and workmen could point to with pride. It was an incentive to get down to brass tacks and do some real safety work. To a number of those who entered the contest, it was their first experience in trying to go a period of time without experiencing accidents. The test was a valuable one for many organizations and it showed them what they could do, or how they should organize their work to get better results.

"One unusually good result of the contest was that sixteen mills finished the month without experiencing a lost time accident. To a few of them the experience was not a new one, but most of them had never done so before. Seven mills had only one lost time accident for the month and only two of them had more than ten lost time accidents. This shows that every mill worked hard and did achieve great benefit of keeping down their accidents.

"The equalization factor, calculated from insurance manual rates, absolutely puts each mill on a basis so that the pulp mill could compete with the paper mill on equal terms. It was necessary to calculate an equalization factor for each mill, which, of course, varied with the number of men employed in various operations. High figures in the equalization factor indicate a greater hazard existing and a larger number of men exposed to the more serious hazards. Where a number of mills have the same equalization factor, the number of employees is the basis for judging the relative standing of various companies.

"The mill which has won the cup is the Port Edwards Mill of the Nekoosa-Edwards Paper Co., Port Edwards, Wisconsin. This mill employs 789 people. They worked a total of 207,980 hours in the month of August without any lost time accident. Having the greatest number of hazards to overcome in their performance, this mill receives the highest rating, and THE PAPER INDUSTRY therefore presents this cup to them with their heartiest congratulations.

"The fifteen other mills that finished the month without experiencing a lost time accident are also worthy of receiving some recognition for their excellent work, and THE PAPER INDUSTRY has therefore decided to award each of them a certificate in commemoration of their achievement. The name of these mills are as follows:

"The Niagara Mill of the Kimberly-Clark Co., Niagara, Wis.

"The Kimberly Mill of the Kimberly-Clark Co., Kimberly, Wis.

"The Niagara Falls Mill of the Kimberly-Clark Co., Niagara Falls, N. Y.

"The Menominee Mill of the Marinette & Menominee Paper Co., Menominee, Mich.

"The Marinette Mill of the Marinette & Menominee Paper Co., Marinette, Wis.

"The Defiance Paper Co., Niagara Falls, N. Y.

"The Port Angeles Mill of the Paraffine Companies, Inc., Port Angeles, Wash.

"The Fort Howard Paper Co., Green Bay, Wis.

"The Woronoco, No. 2 Mill of the Strathmore Paper Co., Woronoco, Mass.

"The Mittineague, No. 1 Mill of the Strathmore Paper Co., Mittineague, Mass.

"The Chillicothe Paper Co., Chillicothe, Ohio.

"The Emeryville Mill of the Paraffine Companies, Inc., Emeryville, Calif.

"The Sumner Mill of the Paraffine Companies, Inc., Sumner, Wash.

"The Mittineague, No. 2 Mill of the Strathmore Paper Co., Mittineague, Mass.

"The Lincoln Mill of the Lincoln Pulp & Paper Co., Ltd., Merritton, Ont.

"Congratulations are extended to each and every mill that entered into this contest. That the work might continue and be demonstrated over a longer period of time than a brief thirty days, THE PAPER INDUSTRY will start a new contest beginning January 1, 1926, to last for six months, ending June 30th, 1926. Announcement of this will be published in due time.

"Copies of the accident records are distributed to everyone present at this luncheon."

Mr. Rosebush, in expressing his gratification at the winning of the cup by his mill, said:

"In trying to think of what I might be able to say to you about the winning of this cup by the Port Edwards mill, my mind went back across field and marsh to a man going toward the mill with his basket in his hand. His name is Bill. Not long ago Bill had an accident and there was no way to avoid the immediate amputation of the third finger of his left hand. After the operation Bill looked at the dressing and turned to the nurse.

"'Do you suppose the boss will let me work to-night?' queried Bill.

"'You put it up to him,' said the nurse.

"That night Bill showed up on the job.

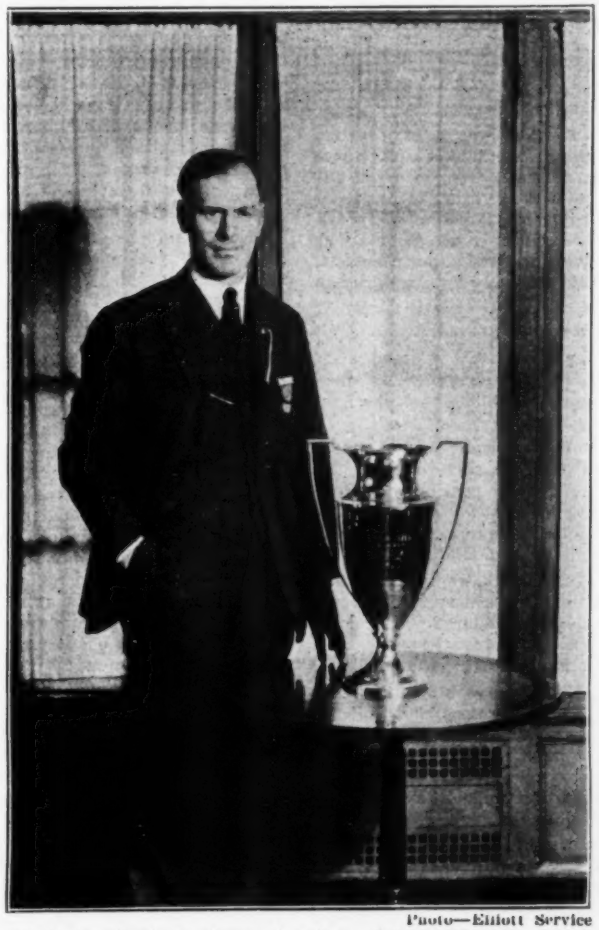
"'You want to work with that mitt?' demanded the foreman.

"'Yep,' said Bill.

"I'm thinking," continued Mr. Rosebush, "of the men like Bill who won that cup for us. Bill's accident did not, as a matter of fact, occur in August. Perhaps you might criticize us for letting Bill go back to work. But Bill's attitude exemplifies what we are fighting hard to get, the inculcation of the right spirit in the men, and Bill's example would go far to help develop that spirit. It is the development of the spiritual side of the safety movement in which its future lies. I'm proud and glad to take this cup to all the boys—the boys who won it."

Referring to the future and to contests to come, Mr. Rosebush confessed:

"I'm afraid of Kimberly-Clark. The Kimberly mill has recently completed a period of 150 days of complete safety with a total of 135,000 man days, and while the Port Edwards mill is now in its 188th safety day and the Nekoosa mill in its 102d day, our total man days—on account of fewer employees—does not surpass their record. Still we do not intend to rest until they regard us as we do them—as dangerous competitors. In short—watch our smoke!"



Photo—Elliott Service

F. H. Rosebush, in charge of Safety, Nekoosa-Edwards Paper Company, Port Edwards, Wis., and the silver loving cup, which was presented to this company by THE PAPER INDUSTRY, *of Chicago, for the best safety record made during the month of August, 1925*

Program Well Arranged

It is impossible to refrain from referring continually to the logical arrangement of the program and the importance of every single talk to the safety movement in general and to the paper business in particular. Opening with D. B. Davies, general superintendent, Hoberg Paper & Fiber Company, Green Bay, Wis., who spoke with obvious authority and experience on "Body Inflicted Accidents," the connection with the paper and pulp industry as a whole was logically made by a talk by Dr. Hugh Baker, the secretary of the American Pulp & Paper Association. The paper mill nurse, paper mill guards, the safety inspector and the very important problem of taking care of the employees in the woods were other papers. One of the important situations in the relation of safety to the paper and pulp industry was handled by two of the men who must in the end mean the most to the movement if it is to achieve its real usefulness—the executives. S. F. Shattuck, the treasurer of Kimberly-Clark Co., drew an interesting and happy picture of the company executives fulfilling their rightful place in the safety work. The climax of the program and superlatively appropriate statement of a logical theme for the whole three days' work was the inspiring talk given by Judson G. Rosebush, general manager, Northern Paper Mills, Green Bay, Wis.

Mr. Rosebush, the Nekoosa-Edwards man's big brother, said that the official title of his talk should be changed to "A Tentative Philosophy of Safety." He emphasized, as the only sound justification for the safety movement, its spiritual value and foundation, and stressed the fact that in the existence of the safety movement lay the final answer to the capital charge against ruthlessness.

It is the very strong desire of the members of the section to line up the rest of the executives in the paper industry with Judson G. Rosebush, S. F. Shattuck and other men at the head of the industry who take the same working interest in the movement as they do.

Alexander R. White, sanitary inspector, Province of Ontario, excited real attention when he diverged slightly from the announced subject of his talk to charge the paper and pulp industry with caring for the health and safety of the thousand men in the mill, only to neglect, in great measure, the three thousand men in the woods. He stressed the low grade of provision made for the housing and care of men in the logging operations, and called on paper and pulp mill safety men to give heed to one of the crying needs of their industry.

Election of Officers

Nominations for the section's officers for the coming year

were presented by G. W. Phillips, of the Champion Fiber Co., of Canton, N. C., chairman of the nominating committee. The nominating committee consisted of Mr. Phillips and Ernest Augustus, safety and plant publication man for the Mead Pulp & Paper Co., Chillicothe, Ohio. The nominations were as follows: For chairman, W. J. Peacock, personnel director, Northern Paper Mills, Green Bay, Wis.; for vice-chairman, F. H. Rosebush, head, Department of Industrial Relations, Nekoosa-Edwards Paper Co., Port Edwards, Wis.; for secretary, Ameil Umbrahan, the Fort Howard Paper Co., Green Bay, Wis. These nominations were unanimously confirmed by the section.

FIRST SESSION

Tuesday morning, September 29, at 10:00 o'clock, private dining rooms 1, 2 and 3, mezzanine floor, Statler Hotel.

M. G. Hoyman, general superintendent of the safety service, Kimberly-Clark Co., Neenah, Wis., and chairman of the section for the year, presided. Mr. Hoyman welcomed the assembled members and outlined the pleasure in store for them as the program progressed. He referred to the devoted work of W. J. Peacock, secretary of the section and chairman of the program committee. D. B. Davies, general superintendent, Hoberg Paper & Fiber Co., Green Bay, Wis., was introduced as the first speaker.

Body Inflicted Accidents

The subject of Mr. Davies' paper was "Body Inflicted Accidents," in which he said: "The value of guards is so well understood today that no thinking executive considers a machine complete without adequate safety guards.

"However, the conviction has come to us that even the most intelligent guarding of machines does not solve entirely the problem of accident prevention. After all possible guarding has been accomplished and we have brought about safe conditions in our plants, we have still the human element, which brings us to the subject, 'Body Inflicted Accidents.'

"When we examine the causes of accidents, we find that they are numerous, but perhaps the chief causes may be set down to: Confusion, due to poor or excitable leadership; carelessness; horseplay; ignorance; monotony; thoughtlessness; stupidness; physical defects; absent mindedness; awkwardness.

"Carelessness extends beyond the average man and quite commonly we have accidents due to foremen or superintendents who fail to instruct new employees about dangerous practices or places. A foreman who fails to point out dangerous places and practices to a new employee is to my mind unfit to be foreman and is a hazard. If he fails in this phase of his duty, he will certainly not do justice to his job in other respects."

Mr. Davies then explained how these different causes mentioned contributed to accidents in the wood yard, digester, wet, beater and machine rooms, and cited many examples of accident records to bear out his argument.

As to remedies, he suggested that a great deal can be done by more careful selection of employees when hiring, more careful instruction to new men coming into the mills, or to old employees when they are given new work. Sell foremen completely with the safety idea, so that they in turn will pass it on to those under their charge as a matter of course.

The discussion of Mr. Davies' talk was spontaneous and a majority of the members of the section participated. Almost the solution of the problems his paper outlined. Mr. Davies said:

"All questions of guarding and safety construction aside the fundamental solution to the whole problem lies in the selection and education of employees. There must be a constant effort to select the right man for the job. There must be insistence on the training of the new man by the foreman.

"One important factor is the attitude of the executive of the mill on the safety question. The foreman represents the management to the new employee. If the foreman believes that the management is squarely behind him he will be sold on safety work and selling the foreman is a big factor.

"Examination of new employees to avoid the errors of placing men on jobs for which they are not fitted is one important step in advance and with that comes the big question of the education of the foremen."

Sam Pruyn, of Finch, Pruyn Company, Glens Falls, N. Y., wanted to know what solution the members had to offer for frequent injuries from the short handled picaroons which are frequently used for handling logs. This brought out expressions of wide divergence of practice in handling two-foot or four-foot logs. Some mills handle all their wood without the use of picks. The solutions offered for the condition were largely of two classes: improvement in practice as to the use of the pick and insistence on the principle of keeping the tool used in good condition. One mill representative, W. A. Gleason, safety engineer, Hammerhill, Erie, Pa., said that in his mill a tool had been designed after the men using them had been consulted as to what they considered the best one to use and this had proven perfectly satisfactory.

Mr. Davies spoke of piling logs as a possible wood room hazard and gave it as his opinion that no hand piling should be done without wire binders in the piles.

In response to a question from W. J. Peacock on the subject of trucking hazards, Mr. Davies gave the following rules: Not as a complete statement of the case but as the important matters which occurred to him.

"First," said he, "lift trucks are the only thing for safety. "Second, if you must use the other kind—look out for the tongues.

"Third, keep the floors in perfect condition.

"Fourth, pile the laps carefully on the trucks and in high piles use something for a binder."

"It has been the experience in our mill," continued Mr. Davies, "that less than half a truck load of pulp laps has been enough to break a man's leg."

Mr. Davies remarks on the matter of examination of new employees brought about a vigorous discussion of the question of such physical examination. Mr. N. F. Bartlett, of Hollingsworth and Vose of Boston, wanted to know how those members who gave physical examinations went about it and whether they examined old employees as well as new ones.

Ameil Umberham, of the Fort Howard Paper Company, Green Bay, Wis., told of having instituted eye examinations and of having received immediate benefits. Mr. Umberham felt that he could trace increased interest and success in safety work as a result of this single stimulus in addition to the obvious advantage to mill and men from the improvement in vision effected.

R. S. Turner, of the West Virginia Pulp and Paper Company, Mechanicsville, N. Y., told of starting physical examinations on all new employees five months ago. Mr. Turner felt that the value to him in selecting the right man for the job was tremendous and it had been proven in instance after instance. He spoke of having four candidates for a job and finding through the physical examination that there was something wrong with each one which would have made it exceedingly hazardous for the company to employ him. Mr. Turner said that he made no effort to examine old employees.

Ernest Augustus, of the Meade Pulp and Paper Company, Chillicothe, Ohio, gave as the practice of his company that all new employees were given an examination. The men hired were then placed on the jobs for which they were best fitted.

Kenneth L. Faist, Champion Coated Paper Co., explained the classification system as practiced by that company.

"Employees," said he, "are placed in four classes. The first class and the second comprise those without physical defects or with very slight ones. The third class has rather serious ones and the fourth has real defects which require specially favorable jobs or some particular attention. Those in the last two classes are re-examined periodically for indication of any change in their condition."

A. F. Palmer, of the West Virginia Pulp and Paper Co., makes it a practice to examine all employees, extending the examination to old as well as new employees. He says that the old employees who have taken the examination have found it good and have been encouraged to take care of physical defects of which they had no knowledge or which they had been neglecting. He feels that the examination of the old employees has been attended with considerable success in his mill.

Ernest Augustus wanted to know what was done with old employees after they were examined. "Do you fire them if they are not up to standard?" queried the Meade man.

"Certainly not," was the prompt and somewhat indignant

response from several quarters. Mr. Palmer explained for himself that the company was content with the benefit which accrued to the employee from finding out what was wrong with himself in cases where his defects were a real handicap to him without his having been aware of it.

Mr. Faist said that one great advantage derived from the examination of old employees was the possibility of classifying them for jobs where such defects as were found would not be a handicap to them.

The persistent August wanted to know if the man in whom the examination revealed a defect did anything about it, and Palmer of West Virginia assured him that his company's experience had been most encouraging in that respect.

The question of knowing what went on in the man's home cropped up somewhere in the discussion and Mr. Faist was curious to know how far any company carried such investigation. Mr. Bartlett, of Hollingsworth and Vose, was most emphatically in favor of the personal touch. Other members stressed the personal touch as well, although they insisted that it must be personal and not done in an official or prying fashion.

Mr. E. M. Duperrault, of the Industrial Eye Service, of Green Bay, Wis., spoke extemporaneously and briefly on the question of the examination and correction of vision in industrial workers and the benefits to the workers and the employers. Mr. Duperrault elaborated this theme in a short talk before the Section the next day.

Safety in Relation to Future of Paper Industry

Dr. Hugh Baker, secretary, the American Paper and Pulp Association, New York City, was introduced to the Section. Dr. Baker spoke of his interest in all things related to the paper and pulp mills of the country and especially of his interest in safety. Dr. Baker insisted that one great safety theme in connection with the paper and pulp industry was the security of the whole industry as represented by the forests of the country and the question of growing wood in this country. He cited as an example of how acute the question had become, the fact that wood for the manufacture of paper is being imported from the Baltic countries of Europe. Dr. Baker elaborated his theme in his paper.

There was no discussion of Dr. Baker's paper as it dealt with general principles in relation to the whole industry. The meeting adjourned until Wednesday morning.

SECOND SESSION

Wednesday morning, September 30, at 10:00 o'clock, private dining rooms 1, 2 and 3, mezzanine floor, the Statler.

Interest in the splendid program being offered by the Paper and Pulp Section brought a number of additional attendants to the meeting and it was difficult to find room for the group in the space provided. The report of the nominating committee, headed by Mr. Phillips, was received at this session, and the report was unanimously supported by the election of the slate as he brought it in. Miss Mary Elderkin, of the Union Carbide Co. and a leading member of the National Association of Industrial Nurses, read the paper prepared by Mrs. Ostrander, supervising nurse, the International Paper Company.

Nurse's Place in Reduction of Lost Time Accidents

Mrs. Ostrander's paper contained a definite outline of the duties of an industrial nurse. Among valuable things it stated:

"The work of an industrial nurse must be carried on instructive and educational lines, like all other branches of public health nursing. The predominant and foremost aim of this form of nursing is to improve the health and efficiency of the workers by safety and health education.

"In preventing lost time accidents, an industrial nurse plays a very important part. By careful observation she can determine whether the accidents warrants the services of a physician. Besides, she is able to render the best first aid possible to minor injuries such as small punctured or lacerated wounds, cuts, bruises, sprains, burns, etc. And where injuries like the above mentioned are properly cared for in the first aid room there is seldom need of a physician, because the danger of infection is very slight when wounds are treated with precaution and dressed aseptically immediately after they happen, and advising employees upon various sanitary and safety matters that may come up. By ready co-operation with all who have charge of sanitation and safety. The reporting of any unsanitary or unsafe conditions that may be observed. The frequent reading of safety and sanitary literature."

W. J. Peacock, chairman, the program committee, explained that Mrs. Ostrander had been out of the country when her name was placed on the program and the preparation of a paper was all that she had been able to accomplish. It had not been possible for her to attend the session.

Miss Elderkin, invited to give some of her own views on the question of the nurse's place in industrial health and safety work, spoke briefly as follows:

"In selecting a nurse for your plant work or for your first aid station, you all try to get the best possible nurse, which I concede is the minimum requirement. You get a competent graduate nurse. It is my feeling that the situation needs more than that. The problem of industrial nursing is so closely allied with that of public health nursing, in fact so inextricably connected, that the industrial nurse should have training in public health nursing. The industrial nurse should, wherever possible, take an interest in the family life of the employees with whom she comes in contact, and a training in public health nursing will enable her to give a service in this line which she could not otherwise do.

"The thing an industrial nurse with public health training can do is to help the family of the employee to attack its health problems in the most efficient and economical fashion. If, for instance, there is tuberculosis, the nurse's public health training will enable her to suggest ways of combating the condition which are at once effective and within the reach of the means of the family involved."

Discussion of Mrs. Ostrander's paper and the short talk by Miss Elderkin was brisk and productive of much interesting information. F. H. Rosebush, Nekoosa-Edwards Paper Co., asked the opinion of Miss Elderkin as to how much a nurse should go outside the plant.

Miss Elderkin said: "Where the hazards in your plant are such that the first aid station should be available all the time, the nurse should not leave the plant. Where the hazards are less severe and the first aid can perhaps be handled by the nurse with the help of trained first aid men among the employees, the nurse may have an opportunity to do community work, which is always of inestimable value.

"The answer, like the answer to so many other problems, depends on the community and the conditions. The Union Carbide Co. has, as a matter of fact, examples of the three conditions in various mills. Some mills have a mill nurse who never leaves the plant. Some mills have nurses who spend part of their time in the mill and part outside among the families of the employees where the situation seems to warrant it. There are some plants where a community nurse is employed who never comes inside the plant. If the nurse, where there is only one, has time, she should most certainly contrive to visit the families of the employees, for there she can do a splendid piece of public health work."

Miss Frances Brink, a nurse interested in paper and pulp mill work, elaborated briefly on the theme that the nurse should teach the family of the employee to take care of itself. The end, she felt, was that the employee would be relieved of worry which interfered with his best work and attention at his work. The preoccupied workman is the workman who is going to get hurt.

The question as raised of the same nurse from more than one plant. F. H. Rosebush spoke of the two Nekoosa-Edwards plants which are covered by one nurse. He said that the nurse spent the morning at one plant and the afternoon at the other and that the scheme worked out very well.

"There is no resident or plant physician. The company retains a doctor who lives near one of the mills. The nurse is not responsible to him, but she and the doctor work in co-operation and the whole thing works out very well."

Miss Elderkin pointed out that an arrangement for companies combining to hire a single nurse was being urged in New York City. This, it was felt, would solve the problem for organizations which could not possibly hire a full-time nurse, but which had great need of some industrial nursing service.

"The Industrial Clinic," continued Miss Elderkin, "does considerable work for small concerns in New York. There is also growing up a practice of employing the Visiting Nurses' Asso-

ciation on small industrial problems. This, of course, is only a makeshift. If your plant has one hundred employees you can find plenty of employment for your nurse in the plant and among the families of your employees."

F. M. H. Cushing, of the Provincial Paper Mills, Thorold, Ontario, told of an arrangement entered into by three mills and the municipality of Thorold, Ontario. These four different bodies secured the services of a public health nurse and paid the expenses among them. It was found that the arrangement was of great service to all concerned.

One point brought out in the discussion was that nurses should be restrained from practicing medicine, so to speak. That is, as Miss Elderkin put it, there should be in every case a physician to whom the nurse should be responsible, and accident cases should be his responsibility, not hers. The matter of how many dressings she should be permitted to do without his seeing the case should be definitely laid down. In any case the responsibility should be on the shoulders of a physician and not a nurse.

Close-Ups on Paper Mill Guarding

E. E. Jones, engineer, The Surty Mfg. Co., Inc., Chicago, presented his paper on paper mill guarding, which contained in part:

"While the safeguarding of any dangerous condition is possible where there is a willingness to put the necessary time and expense into it, the guarding of a sufficiently large number of danger points in every paper plant has been solved so that the employment of these guards would practically eliminate paper mill accidents.

"The first place or time to consider the guarding of a machine is at the shop where the machine is built. Particular attention should be given to supplying shafting long enough to allow the gear or pulley to be placed far enough from bearings so that the guard can go between and permit easy access to the bearing, and all permanent gears should be guarded by the manufacturer of the machine. The next consideration is required by the millwright when installing the machine in the mill. The foundation should be made so the gears or pulley overhang, and will allow the guard to be made so as to comply with state code, and still require only a minimum amount of labor in fabricating.

"In order to secure ordinary care and avoid abuse of guards from the workmen, it is necessary to design guards so as to conform to the guarded part. In many cases I have seen guards that remind me of the first pair of trousers mother made for Johnny, and when he went out to play the boys didn't know whether he was coming or going. A few years ago I designed a guard, and when the millwright tried to install it, he could not place it. When I called I found that he was trying to place it upside down, and it certainly was made along the lines of Johnny's trousers. The paper mill owner spends a large sum of money in machinery, and places a valuable man in charge of the oil and grease cans. His neglect of duty will cause the owner to spend thousands of dollars in needless repairs. But along comes the millwright and places a guard over the bearings which the oiler must care for. Occasionally a small door is placed in the guard through which the oiling is done. Does this guard protect the oiler? No, it creates an extra hazard for him because of the unhandy position he must assume to do his work. The correct way is to leave all bearings outside of the guard, and if this is not possible a pipe should lead from all bearings to an oil cup outside of the guard."

The following discussion, while short, contained several points of interest to paper mill men: One point was that guards save money on employers' liability insurance. Mr. Jones urged the guarding of slitters, because the exposed knives meant extra charges on the insurance bill, if for no other reason.

F. H. Rosebush expressed himself very vigorously on the subject of placing more of the responsibility for machine guarding on the machinery manufacturers, saying:

"Pumps and screens are conspicuous examples of machinery which is built without proper guards and to which is very hard to fit guards after it comes into the plant. You safety men should go home and influence your managers or purchasing agents, or whoever has the matter in hand, to begin to insist that newly purchased machinery be properly guarded when it comes into the mill."

M. G. Hoyman said that in the Kimberly-Clark organization purchase orders for machinery are made out, insisting that the machinery be delivered guarded according to the laws of the state in which it is to be used.

It was pointed out in this connection that guarding by the manufacturers is infinitely cheaper than building guards afterwards, as the machine is then designed for the guards which it is to carry. In addition the manufacturer turns out the guard as a part of the machine and the quantity production cuts the cost.

Ameil Umbrahan, of Fort Howard Paper Co., asked if there was much difference in the codes relating to guards. Mr. Jones replied with some feeling that they differed widely. He gave it as his opinion that the Wisconsin code was the strictest, and stated that it took a very clever attorney to properly interpret the various codes.

W. J. Peacock said that there was no question in his mind that you could buy guards more cheaply than you could make them—in fact, he asserted that he had the figures to prove it.

Defective Vision and Eyestrain

E. W. Duperrault, of Green Bay, Wis., gave a very interesting talk on the question of improving industrial vision. He said in part:

"Authorities have been claiming that the extent of defective vision and eyestrain among workers is from 65 to 75 per cent. While this is true, no doubt, for industrial requirements, we may ignore about 15 per cent of these defects as of minor importance. There are, however, about fifty workers out of every hundred who are suffering from eyestrain and defective vision to the extent that it must be recognized and corrected as far as possible.

"I have the percentage sheet of the report made to the Fort Howard Paper Co., Green Bay, Wis., relative to the eye survey made in April of this year. It is representative of the vision average of the factory. It is given as follows:

Good vision	51%
Defective vision possible to correct	46%
Defective vision not possible to correct	3%
Defective vision already corrected	14.8%
Defective vision corrected at survey	20%
Defective vision remaining to be corrected	12.2%

"The remaining 12.2% has since been corrected, and this plant has now attained the point of high visual efficiency and is reflected in its safety record. For four months after this survey the company did not experience a lost time accident. This is the first time that this plant ran a full month or longer without a lost time accident.

"Each industry has visual problems of its own. The paper industry has its peculiar visual problems. There are certain jobs in paper mills that require certain types of spectacles. Manufacturers of highly colored papers find that workers suffer fatigue and lowered production through the effect of colors on the eye. A remedy for this has been found.

"We spend yearly thousands of dollars in safety signs, in printing instructions for the safe operation of machinery, and yet there are men in every plant that are unable to read them.

"Defective vision has been proven a direct cause of industrial accidents. Defective vision lowers production, and in many cases eyestain is the basic cause of many of our sick cases."

A Tentative Philosophy of Safety

At this point in the program Judson G. Rosebush, general manager, Northern Paper Mills, Green Bay, Wis., presented his inspiring paper on the subject which he designated "A Tentative Philosophy of Safety." Covering fully four thousand words, it was truly the climax of the Section meeting. Following an introduction in which he defined "philosophy" as the "fundamental part of any science," he stated that the Safety movement is rapidly becoming a science. "Formerly, safety was an instinct," he said, "but as I understand it, the whole movement is now to elevate Safety from the field of instinct into the field of rational or scientific acting."

Five points regarding this new science of Safety, Mr. Rosebush stressed in part as follows:

"1—The primary responsibility for Safety rests upon the

owners of the farms, factories and railways, though of necessity they must delegate the immediate task of securing Safety to their foremen and superintendents. . . . Applied specifically to our Safety program, I should say that the time is here when every forward looking factory, mine and railroad must have a constructive accident prevention policy, as a result of the zealous leadership of its able executive. . . . Whether employers wish it or not, society has now decided that upon them rests the whole responsibility for accident prevention.

"2—The secondary fundamental idea of this Safety movement is to save life at its lower levels in order to enrich it at its higher levels. The slogan of 'Safety First' is a very inadequate slogan, for it seems to imply that every other thing in life is subordinate to this idea of Safety. Actually, however, as we all know, there are many things in life far more essential than your physical safety or my physical safety—many things which we would readily put ahead of our own safety, such as integrity of our family, and the honor of our country. . . . We are never going to sense the real significance of this whole Safety movement until we recognize the fundamental significance of a remark by Isaiah Hale to the effect that 'a physical injury is a great moral injustice to the man injured.' The physical injury is atoned for by compensation insurance; but the moral injury becomes a permanent scar on the man's soul.

"3—The Safety movement, in the third place, tends steadily to place less emphasis on mechanical guards against accidents; but tends steadily to place more emphasis on the state of mind of the working man. . . . The greatest number of accidents are not caused by machinery, but by hand labor and by hand tools. Next to that comes accidents caused by machinery, and next to that accidents caused by slipping on bad floors. As G. A. Orth, manager of the Safety Department of the American Car Foundry Co., which employs 25,000 men, says, 'The prevention of accidents is largely a matter of the right mental attitude.' The vital thing is the state of mind.

"4—In the fourth place, the Safety movement is a tremendous agency for good will in the plant. . . . Safety affords a steady and constant point of contact between the office and the industrial working men at a point where the working men's interests are paramount. While other evidences of the friendly attitude of the office towards the mill may be more or less spasmodic and intermittent, the matter of Safety calls for constant, uninterrupted interest between the employer and the employee. Moreover, out of a Safety committee may come innumerable chances for mutual understanding in other directions.

"5—In the last place, the Safety movement is removing the fundamental charge of ruthlessness so often made against modern capitalism. The usual indictment against capitalism is that it cares only for production, for efficiency, and for profits, and nothing for individual rights and individual welfare. In the Safety movement, however, we find now a great national surge supported today by more than 4,000 individuals together for the prime purpose not of emphasizing efficiency, not of promoting profits, but of stressing the value of human life.

"To be sure we have not as yet worked out the full implications of this theory of the priority of human life as against a low mechanical cost, but sooner or later the whole world will come to understand for example, that prohibition must be supported because it makes a safer state of mind on Monday morning; that a far larger number of recreation grounds must be created for children because safety for the child in the crowded streets of America is no longer possible, and that the whole idea of safety must rest not upon its economic value to the owners as such, but upon the essential priority of human values as against mechanical costs. Indeed, in the whole matter of Safety, and welfare work in general, the only safe rule to follow is to balance the books each night; to calculate that the day's results in Safety and happiness are compensation in full for the day's efforts in these directions.

Be that as it may, the Safety movement today is the most significant expression of the Christian religion which exists in our economic life. The Master came into the world primarily to save life for deeper and richer experiences. Fundamentally, all over America today are thousands of men in industry who are attempting to carry out in their own business, this philosophy of life through this very Safety movement. While we can not, of course, measure the extent to which the inspiration for this new comment has come from the clerical leadership of our churches in America, it is none the less, a fact that the immediate inspiration, the immediate contact, and the immediate administration of this new evaluation of human life has come out of the heart of modern capitalism itself.

"In other words, at the very time when many good men are criticizing modern capitalism as being out of harmony with the essentials of the Christian religion, there is being made by capitalism itself, a tremendous drive to emphasize, not production, not efficiency, not profits, but the essential worth whileness, the essential priority of human values as against these things."

Luncheon

The luncheon followed this session. Mr. Hoyman yielded the chair to Mr. W. J. Peacock, secretary of the section. In the course of this cememony each gentleman tried to confer on his co-worker the credit for the success of the meeting and only succeeded in convincing his hearers that the section's work for the year had been in charge of two very capable gentlemen.

It was at this time that Mr. Peacock started to talk contest with another section, or all the other sections, of the Safety Council, and by the end of the luncheon he had the Section worked up to the point where it broadcasted a resolution taking on all comers.

Management Responsibility

S. F. Shattuck, treasurer, Kimberly-Clark Co., Neenah, Wis., presented a valuable paper on the subject of "Management Responsibility," in which he said that it is obviously the first duty of management to dignify the Safety program and emphasize its importance, first, with superintendents and heads of departments; second, with foremen; third, with rank and file employees; and fourth, with the public. "This emphasis must not be spasmodic," he said, "but as constant as pressure for production and quality."

"Last but not least," said Mr. Shattuck, "a management must be willing to sacrifice financially for Safety returns. Any live foremen's organization is willing and eager to put across a program that will capture the imagination of men, but all such programs need financial backing, and its our experience that money thus spent is well spent."

The cup offered by Edward B. Fritz, publisher, THE PAPER INDUSTRY, of Chicago, was presented at this time to the Nekoosa-Edwards Paper Company, Port Edwards, Wisconsin.

THIRD SESSION

Thursday Morning, October 1, at 10:00 o'clock, private dining rooms 1, 2 and 3, mezzanine floor, Statler Hotel.

How They Did It

It was the very happy suggestion of Mr. Hoyman, chairman of the Section, that the representatives of the mills which had the perfect safety records in August tell "How They Did It."

Eward W. Young, the executive of the Kimberly-Clark Company who leads the Safety work at the Kimberly plant led off.

"The safe August goes back to the famous yellow and green contest at the Kimberly plant. It is based in general on selling the idea of personal safety to the formen and the men.

"We had a contest on with the Niagara mill but the interest in it was lagging. The Kimberly mill was divided into two groups, one taking yellow as its color and the other taking green. The groups were led to battle by executives of the company and incited to rivalry in every possible way—safety, stunts, entertainments—every conceivable thing. The speaker was organizer of the stunts of the green division.

"A great deal of outside time was spent by the men and the leaders in organizing their various activities and no trouble and expense was spared. The Kimberly-Clark Company had just built a new club house at the Kimberly plant and this was kept working full time. The range of entertainments went from prize fighting to catching the greased pig and included

a circus and the usual dances and other milder entertainments.

"The purpose of the stunts was to get the men into the habit of working together to put something across and in this way they were learning to work together to put Safety across. The contest rose to a fever heat. One division put on its stunts Monday noon and the other Friday noon, from 12:30 to 1. Some of the parties were at night.

"The mill safety council was organized and met once a week. It was attended by superintendents, department heads and foremen and real programs were prepared for consideration. The result of all this was that everybody was learning co-operation and everybody was working with his neighbor for safety.

"This led up to the 150-day safety record of the Kimberly mill and to the record of 135,000 consecutive safe men days, which as far as we know is the best record in the business.

"Now we have at stake a $1,000.00 prize for the mill which makes the best record for the year."

Leslie of the Lincoln Paper Mills, Ltd., Merriton, Ontario, was the next speaker to describe the efforts made to achieve the safety month in August. The August safety contest came in the middle of the three-month safety contest being staged by the Lincoln mills for the three plants. The company has no permanent safety engineer. The contest was run by the safety committee, the members of which were chosen by the men of the three plants. This committee elected a chairman and the chairman of the safety committee together with the three plant superintendents and a management representative formed the contest committee.

The contest was conducted very much as one had been conducted in the city of Niagara Falls. Each mill had a thousand points to start with and one point was deducted from the score for each accident. There was considerable propaganda by the safety committee. The results secured, in addition to the achievement of the safety August, were very encouraging. The record for all three mills in June was 4 accidents and 48 days lost; in July, 1 accident and 6 days lost.

In this time the Lincoln mills progressed from seventeenth place among the industrial plants of Ontario which report their safety experience, to third place in this group. The mills which were ahead of the Lincoln mills had only about 40 employees, while the Lincoln mills have about 250 in each plant.

Rosebush on How He Won the Cup

"It usually takes an explosion to wake people up. In January, 1925, it was necessary to empty a tank of liquid chlorine. In order to get the chlorine to move, the tank had to be heated slightly. The man in charge of the job covered the tank with a piece of dryer felt and stuck a steam hose underneath the felt. He melted the safety plug in the tank and the chlorine gas came out and gassed nine men. We had eighteen accidents in January, 1925. We called in the Safety Committee to meet the president of the company, the mill manager and the department heads, and the consensus of opinion was that the safety policy would have to be changed if the type of accident being experienced was to be avoided. Two principles were laid down. 1st—Men first, machinery second. 2nd—The company felt that it was doing everything that was possible in the way of guarding machinery and educating the men. The men must now assume their share of the responsibility. No man could be careless and throw the responsibility for his carelessness on the company. As a result of the ensuing campaign, there have been no accidents in the Port Edwards mill since March and none in the Nekoosa mill since May.

"Bulletin work has been largely responsible for this result. Two bulletins a day have been posted and sometimes more. These bulletins have been, in great part, home made. They consisted of cartoons, photographs and, in fact, anything we could think of. Bulletins from outside sources were also used. In August the cup contest was featured by posters furnished by the paper industry supplemented by home made stuff.

"There are over 200 blocks on the sidewalk from the mill gates to the mill, and after the mill had gone 100 days without an accident we started painting the number of safety days on the blocks. We used the records of the Kimberly-Clark Co. as a stimulus. We used a signboard on a stake with the numerals 150 beside the 150th block, and we had another signboard that we placed beside each newly painted block with appropriate slogans urging the achievement of a record equal to that of Kimberly-Clark. When we passed the 150th block, we moved the sign down to the 200 block and we are still on our way."

Petroleum Section Accepts Challenge

At this point in the meeting the Petroleum Section came forward to accept the Paper and Pulp Section's challenge to a contest to determine which is the safer industry. There was considerable discussion of the possible terms under which the contest should be conducted but finally it was resolved that the officers of the section be authorized to make the final arrangements with the petroleum people.

In response to a suggestion that the best paper mill be pitted against the best refinery, Mr. Hoyman of Kimberly-Clark stated, that as the representative of one of the safest mills in the industry he was willing to throw his lot in with that of all the other mills, confident that the interest engendered in the contest would bring them all to a mark in safety work that would enable the group to surpass the performance of the petroleum gang.

Referring back to the description by Mr. Young of how the Kimberly mill achieved the world's safety record, Mr. Hoyman said:

"It is frequently remarked that all these contests into which we plunge must cost a good deal of money and time. This is perfectly true, but to offset this cost we know from the books of the company that during the intensive safety compaign the mill made more and better paper with a smaller staff than had ever been done in the history of the company."

Mr. Pope of the Meade Pulp and Paper Company, Chillicothe, Ohio, wanted to know how they got the men to the noon safety meetings.

Mr. Hoyman said that it was hard to understand the response made by the men to the safety contests until the mill had been actually visited. The men off shift came down to the contests and it was necessary to change the Monday stunts to some other day because the men's wives wanted to come too, and this interfered with wash day. Mr. Pope wanted to know how they were going to distribute the $1,000.00 prize—if it wasn't to be given out in cash.

"Well," said Mr. Hoyman, "I can't tell you and I don't believe there is anybody else who can, because the men themselves have changed their minds more times than their wives would have."

The Safety Inspector

In the absence of Mr. A. S. Wilson, Safety Engineer, American Writing Paper Co., his paper "The Safety Inspector and the Full Co-operation of Plant Organization" was read by Mr. W. F. Ashe, Thilmany Pulp & Paper Co., Kaukauna, Wis. Mr. Wilson's paper defined a good safety inspector as being an asset to any plant. "He should be conscientious," he stated, "feeling responsible for the Safety of those employed in his plant insofar as his efforts to make the plant conditions safe are concerned. He should make inspections at regular intervals and take matters up with the foreman of the different departments regarding the practicability of safe-guarding something that may seem a hazard. The efficient foreman is always courteous to the safety man who is trying to prevent accidents and lost time, and, most important of all, pain and suffering which cannot be compensated in dollars and cents.

"It was not so long ago when the insurance companies' inspectors who used to go through the mill and make recommendations for guards and betterment of conditions were regarded as being forced upon us by insurance legislation. Today good inspection service and compliance with practical suggestions from plant, insurance or public inspection is welcomed by all well regulated plants."

In the discussion which followed, Mr. Braun took exception to the inspector being responsible for preventing accidents. He felt that the inspector frequently took too much on himself and failed to make sufficient use of the authority of the foreman who was actually the man who controlled the workmen. Mr. Braun felt that the safety inspector should show the foreman quite as much courtesy as the latter was expected to show the inspector. Mr. Ashe remarked that

somebody had to take the responsibility for stopping a wrong practice and he felt that the occasion might arise when it would be the responsibility of the safety inspector to tell even the management of the company that certain improper practice must cease.

Alexander White, Inspector of Public Hygiene, Province of Ontario, presented his paper on the combining of industrial health work with the safety movement.

Combining Health and Accident Service

The subject of Mr. White's paper was "The Combining of Health and Accident Service by Industry," in which he said, "There is in Canada, and perhaps more particularly in the Province of Ontario at the present time, a feverish attempt being made by the forest product industries to find some avenue of escape from the intolerable burden of accident cost which has now become of such serious proportions that many operators now claim fifty cents has been added to every thousand feet of sawn lumber, and approximately thirty cents to every cord of pulp wood cut.

"The last ten years of history tells us that the cost of accidents has climbed steadily in spite of the best efforts industry has put forward. Therefore, unless we admit the situation is without hope, we must seek some new explanation for the frequency of accidents and somehow try to propound a definite plan to better deal with severity."

For the last ten years, Mr. White has supervised the public health arrangements and activities in connection with the paper industry in Ontario, and has created and developed an organization which has demonstrated its usefulness in a most tangible manner so that it is now acceptable to industry and admitted to be an important cog in the industrial machine.

Mr. White offered as quite natural that the paper manufacturers should turn to this organization for present help and advice, and instead of supporting an accident service and a health service, each separate from the other with the resultant double cost, that some effort might be made to fuse the two services in such a manner that the objective might be more quickly reached.

Mr. White cited a condition existing in wood camps which is food for serious thought. "History," he said, "seems to have associated the woodsman with the body louse (Pediculosis Corporis). I am forced to admit that notwithstanding the many reforms introduced to bring safety to health hazards, to make life more livable to the lumberjack and to provide reasonable comfort, very little progress has been made in promoting personal hygiene among the men. I am, therefore, afraid that lousy men are still all too plentiful, and somehow men seem to become used and to some extent immune to the attacks of these parasites. Take the case of the man, however, who comes to the woods for the first time, and who has had no previous acquaintance with the body louse, but who becomes infected shortly after his arrival in camp. Much of the time which should be spent in restful sleep is taken up in warding off the attacking pediculosis, for it must be remembered that lice feed usually at night when the person is at rest. What then can be the condition of this man after having spent several nights in this fashion? Does he rise from his bed rested, refreshed and ready for a hard day's work? Or is it not to be expected that he is stupid and inactive due to loss of sleep? If this latter condition should be correct, is not this green woodsman, working with edge tools (namely, the axe, cross-cut saw, etc.) not likely to become an accident case shortly after his arrival? Or if he does not cut himself, the tree he is trying to fell may fall upon him and injure him fatally. And thus we note an unsanitary condition which may very easily be the means of producing a serious accident and a further argument for the linking up of health and accident service."

Accident losses in Canadian woods were shown to be appalling. Taking the general lumbering concerns of Ontario as an example, Mr. White said that during the year 1924, there were 32,000 men employed in timber camps, and of this number 44 were killed, 3,432 were injured, and it cost the industry $1,000,000 to pay the shot. "Add to this" said Mr. White, "the permanent disability cases, which are legion, and try to imagine the number of fingers, toes, hands, arms and feet that have been amputated, and you will still find a sufficient excuse for the classical statement made by Juhnke 'That cripples and helpless wrecks are still a by-product of certain industries.'"

A short investigation was made in the matter, and in thirty companies, there were approximately 500 open wounds during the season's work. Sixty percent of these wounds were infected when first seen by the doctor so that the sewing up of the wound was impossible. From this it is seen that if the business of safety organizations is to prevent accidents, there should be a striving to reduce the extent of the disability if accidents should happen and thereby reduce cost. No surer or quicker way to approach the safety ideal was offered than to plan to properly deal with infection of wounds both in paper mills and woods camps.

Assuming that there was interest in what he was offering, Mr. White suggested the following plan which he feels certain will be adopted by the forest product industries in Ontario and perhaps in some of the other provinces as well:

1—The establishment of first aid facilities at every camp, irrespective of size, or the number of men employed.

2—The industrial physician associated with the company, is to agree to teach the *camp clerk* the practice of first aid to the injured (with special emphasis upon the proper sterilization of open wounds), the splinting of broken bones, and the proper methods to use in stopping excessive blood flow and resuscitation. He shall also teach, by practical demonstration, the kind of cases which may be treated in camp and those which should immediately be sent out for hospital treatment.

3—The foreman in each camp is to be responsible for directing the injured man to the first aid officer as soon after the accident as possible, and shall further fix or attempt to fix responsibility for the accident.

4—The woods boss or manager is to oversee the work of both first aid officer and foreman and is to report to the accident engineer or to the Association, any failure on the part of this machine to function at 100 per cent efficiency. Steps will then be taken to probe the situation and apply a proper remedy. The clerk, who, under this plan, is also to be the first aid officer, is subject to discipline in the same manner for failure to perform his new duties as if he neglected his regular work of bookkeeping or other duties.

5—The industrial physician who enters into a contract annually with the company, is to agree to take an interest in accident prevention, and further to do all in his power to hasten the return to work of all men who may be injured, consistent with good service.

On the other hand, the company is to agree to provide light work for such men as may be returned to camp by the doctor but who are not yet strong enough to carry on the same work as before being injured. Mr. White said, "I find that men who have completely recovered from injury but who are not yet as strong as before, are allowed to remain hospital patients for a considerable period after complete healing of the wound. The cost of such practice in Ontario is $3.00 per hospital day, plus the doctor's fee and in addition 66⅔ cents compensation is paid to the injured man, or $5.50 per day, whereas if the man is returned to camp and light work provided, no further cost to the industry will accrue. The man himself will be better off earning 100 per cent of his wages and will recover his normal condition much more rapidly by reason of the light exercise. Even assuming that the injured man does not commence work immediately after his return, you will have saved your hospital cost, your doctor's fee and the man's compensation allowance without imposing any hardship or injustice upon any one by the application of good business practice."

The material which Mr. White presented to the section was so new to the members that there was no discussion. Mr. White was enthusiastically thanked by the section for his excellent paper.

Later in the day W. J. Peacock, newly elected chairman of the section, called a meeting of the new officers and of the executive committee, to whom he presented suggestions for policy and program for the coming year. Announcement of the details of the decisions arrived at in this meeting will be made later by Mr. Peacock.

* * *

Award of the second prize in the nation-wide contest for plant publications was made to Mead Co-operation, published

by the Mead Pulp and Paper Company, Chillicothe, Ohio. Ernest Augustus is the editor of this magazine which has for years been the outstanding plant organ in paper mill circles.

ATTENDANTS

Those attending from **Illinois:** Chicago—C. E. Cox, B. B. Hutchins, E. E. Jones, Allen A. Lowe of THE PAPER INDUSTRY.

Indiana: Indianapolis—Ralph W. Ross.

Louisiana: Bogalusa—W. H. Jenning.

Massachusetts: East Walpole—N. F. Bartlett.

Michigan: Battle Creek—Wm. O'Connell, J. A. Smith.

Missouri: St. Louis—Ed. Ahrenhoerster.

New York: Glens Falls—Samuel Pruyn; Long Island City—Alexander Dieust; Mechanicsville—R. S. Turner; New York City— H. P. Baker, C. B. Castle, Mary Elderkin, E. H. Jewett, J. C. Youmans; Niagara Falls—John Gertz, G. B. MacDonald.

North Carolina: Canton—G. W. Phillips.

Ohio: Chagrin Falls—Geo. H. Smith; Chillicothe—Hazel Alley, Ernest Augustus, L. O. Bonner, W. H. Brown, Chas. Burlile, H. S. Gaynor, Earl Haubeil, H. E. Morris, Ralph Peck, Frank Strubel; Cleveland—A. W. Cheehy, J. J. McCaffrey; Hamilton— Kenneth L. Faist.

Pennsylvania: Chester—Richard R. Taylor; Erie—Wm. P. Coffey, W. A. Gleason, Henry F. Obermanns; Tyrone—A. G. Palmer.

Tennessee: Copperhill—H. T. Harper.

Wisconsin: Green Bay—D. B. Davies, W. J. Peacock, Ameil Umberham; Kaukauna—W. F. Ashe; Ladysmith—E. A. Kennedy; Neenah—L. J. Anderscn, S. F. Shattuck, Edw. W. Young; Milwaukee—Alice B. Smith; Niagara—Geo. McElroy; Port Edwards—F. H. Rosebush; Wausau—F. W. Braun; Wisconsin Rapids—Leo J. Barrett, Warren Beadle, Jr., Jacob A. Huber.

Canada: J. R. Leslie, Merritton, Ontario; D. M. H. Cushing, Thorold, Ontario; Alec R. White, Toronto.

Progress in Chemical Engineering

Demonstrated at Tenth Exposition of Chemical Industries in New York

THE Tenth Exposition of Chemical Industries at the Grand Central Palace, New York, closed on Saturday evening, October 3, after a busy week during which it was visited by upwards of 25,000 people. The exposition occupied 350 booths and there were 311 individual exhibitors. in addition to the exhibits which revealed the progress of invention in chemistry, chemical engineering and mechanics, visitors were entertained afternoons and evenings with a series of motion pictures depicting the rise and development of industries depending on chemistry.

Two courses of instruction, one for elementary and the other for advanced students and engineers, were conducted under the auspices of the advisory committee of the exposition of which Dr. Arthur D. Little, of Cambridge, Mass., was chairman.

Supremacy of American Chemistry

In opening the courses which were attended by several hundred students, with nearly twenty colleges and universities represented, Doctor Little emphasized the supremacy of American chemistry, saying: "The world unquestionably owes a great debt to German science, but the supremacy of German chemistry, of which we have heard so much, is a thing of the past. No American need go to Germany to study chemistry. He will be better taught at home, and American manufacturers now far outstrip the Germans in their appropriations for research."

John W. Wiseman, expert in charge of the Industrial Section of the Bureau of Foreign and Domestic Commerce, delivered an address on "Chemicals in Foreign Commerce" at the Exposition, in the course of which he declared that the chemical industry is basic to practically all other industries. Carefully developed markets, he asserted, tend to reduce unit costs by smoothing out the peaks and valleys in the curves of production and demand. Mr. Wiseman took occasion, however, to warn the chemical industry against over-optimism.

"The grand total of exports from the United States in 1924 reached the enormous total of four and one-half billion dollars," he said. "It would be impossible to segregate chemicals from that total because of the intimate relationship of chemicals with all industry. By that I mean that many of the major developments of chemistry have lost their chemical identity, which is today considered a textile.

Development of Rayon

At one of the intersectional meetings of the American Chemical Society, held in connection with the exposition, Dr. M. G. Luft, technical director of the Industrial Fibre Company, Cleveland, Ohio, lectured on Synthetic silk and its development as an industry, giving a comprehensive account of the use of woodpulp in the manufacture of rayon. The lecture took two hours to deliver and was followed by an interesting discussion in which many chemists took part. The substance of Doctor Luft's lecture is presented on another page in this issue of THE PAPER INDUSTRY.

T. A. P. P. I. Meets at Exposition

A large attendance marked a meeting of the Technical Association of the Pulp and Paper Industry which was held at the exposition on Wednesday afternoon, September 30. This meeting was in charge of George K. Spence, of the New York & Pennsylvania Company, Johnsonburg, Pa., who is president of the association. Papers were read in the following order:

"The Development of the Save-All," by C. T. Leander, of the Dorr Company; "Acid Resisting Alloys Used in the Paper Industry," by Victor Hybinette; "Heat Insulation in the Pulp and Paper Industry," by E. C. Rack, of Johns-Manville, Inc., "An Insulated Paper Mill Roof," by C. J. Beckwith, of Johns-Manville, Inc.; "Evaporating Black Liquor," by R. W. MacGregor, of Ernest Scott & Co.; "The Meaning of Hydrogen Ion Concentration and Its Application to the Paper Industry," by W. A. Taylor, of La Motte Chemical Products Company; "New Developments in Refining and Finishing of Paper Pulp," by K. A. Pelikan, of National Homogenizer Corporation; "Speed Reducers for Paper Mills," by J. R. Shays, of Foote Bros. Gear & Machine Company; "Colored Back-Water and Two-Sidedness in Paper Mills," by John R. Roberts, of E. I. du Pont de Nemours & Co.

Exhibits of Interest to Papermakers

An attempt has been made in the following enumeration of exhibits to list displays of products, machinery and apparatus that pertained in some special manner to the pulp and paper industry.

Abbé Engineering Company, 50 Church Street, New York, exhibited, in connection with the Beach-Russ Company, with which it is associated, vacuum pumps, rotary compressors, and ball and pebble mills for laboratory work. Jar Mill "C" in single and double types was of special interest to paper manufacturers seeing that they have been generally adopted for testing pulps.

Alberene Stone Company, New York, had an interesting exhibit of laboratory equipment as well as furnace blocks of alberene stone used for lining smelters of sulphate and soda pulp mills. By means of illuminated glass panels the various applications of alberene stone were shown; one of these represented the smelting of black liquor in a kraft mill.

Aluminum Company, of Pittsburgh, Pa., showed aluminum metals.

American Brass Company, Waterbury, Conn., made a display of copper, brass, bronze and nickel silver in all forms of sheet, wire, rods and tubes. The exhibit favored the chemical industry proper, rather than the pulp and paper industry. It may be noted, however, that included in the exhibit was low brass and phosphor bronze wire a most satisfactory material for fourdrinier wires.

American Cellulose & Chemical Manufacturing Company,

New York, made a handsome display of silks and satins fabricated from acetyl cellulose which is marketed under the trade name Celanese. This product has been proposed as a preservative for newspapers applied as a varnish when dissolved in acetone.

American British Chemical Supplies, New York, showed a large number of products used in the manufacture of rayon, such as acetic anhydride and cellulose acetate. In addition china clay of South African origin was exhibited.

American Schaefer & Budenberg Corporation, Brooklyn, N. Y., displayed an unusually complete line of indicating and recording instruments, including thermometers, and pressure and temperature controllers. Of particular interest was an exhibit of dial thermometers, an accurate and inexpensive instrument that may eliminate the use of the ordinary glass tube thermometer.

Max Ams Machine Company, New York, had an exhibit of power machinery, and can, drum and metal container machinery, such as are applicable in rayon manufacture.

Anaconda Copper, New York, featured copper, brass, bronze and nickel, as well as some rare metals.

H. Reeve Angel & Co., New York and London, made an exhibit of filter paper and filtering materials. This firm is New York agent of W. & R. Balston, Ltd., internationally known makers of Whatman drawing and filter papers. Among the papers exhibited were those washed with hydrochloric and hydrofluoric acids, which on burning give a negligible quantity of ash. Most of the chemists in the paper industry are familiar with Whatman filter papers through using them in their laboratories.

Bailey Meter Company, Cleveland, Ohio, had a plant size model of a pulverized coal feeder, as well as numerous types of the Bailey meter, which are extensively employed in the power plants of paper mills. These included flue gas temperature recorders, boiler meters, air flow and steam flow recorders. The Bailey boiler meter includes all types, indicating on one chart by means of different colored inks, steam, air and flue gas flow.

Bailey-Perkins Company, Saginaw, Mich., showed a laboratory sized pulping machine, which was interesting to manufacturers of bleached sulphite on account of its extensive use in the artificial silk industry. The mixing and kneading machine of the Werner & Pfleiderer division of this company is well known in the industry.

Barnstead Still and Sterilizer Company, Boston, Mass., showed stills which are used in mill laboratory work.

C. O. Bartlett & Snow Company, Cleveland, Ohio, had on display enlarged photographs of equipment, principally dryers of their own design and building. The style A dryer is being used to some extent for treating woodpulp.

Christian Becker, Inc., New York, exhibited laboratory and analytical balances suitable for the paper trade, a torsion paper scale being among the subjects.

Brown Instrument Company, Philadelphia, Pa., the principal feature of this exhibit was a recording pyrometer of new design. This was shown as single recording, duplex, six-record multiple, triple duplex (three records on each of the two halves of a duplex chart) and control. An indicating control pyrometer capable of controlling automatically the temperature at two points in a furnace formed part of the exhibit. There was also exhibited a portable potentiometer incorporating the unusual 96-inch scale. Thermocouples and recording thermometer bulbs were shown in addition.

Buffalo Foundry & Machine Company, Buffalo, N. Y., exhibited dryers and evaporators of different types and showed illustrations of various apparatus of the firm's manufacture, including the well known Buflovak or inclined rapid circulation evaporator for evaporating black liquor.

Carpenter Container, New York, exhibited fiber shipping drums.

Chemical Catalog Company, New York, had an imposing display of books published by the firm. These included Witham's "Modern Pulp and Paper Making"; "The Chemist's Year Book," by F. W. Atack, L. Whinyates and Francis M. Turner, Jr.; "The Chemical Resistance of Engineering Materials," by Marston L. Hamlin and Francis M. Turner, Jr., and "Chemical Engineers Catalog," which is leased to users at $2 per annum. The fact that this repository of technical data has reached its tenth edition speaks well for its popularity and value.

Chemical and Vacuum Machinery Company, Buffalo, N. Y., showed evaporators, drum dryers and spray dryers, of varying degrees of usefulness in the pulp industry for the recovery of waste and drying of paper.

The Cooling and Air Conditioning Corporation, New York, had an exhibit of interest to paper mill men as the name of the company would indicate.

J. P. Devine Company, Buffalo, N. Y., exhibited some of the special drying, evaporating and impregnating equipment peculiar to the Devine line and distributed illustrated bulletins.

De Laval Separator Company, New York, exhibited apparatus used in the clarification of oils in the power plant.

De Laval Steam Turbine Company, New York, exhibited turbines, blowers, pumps, worm gear speed reducers, and flexible couplings. The worm gear speed reducer was shown in operation. This is a most efficient type of speed reducer and is of high class construction, the parts being composed of chilled phosphor bronze and low carbon steel. The one in operation was actuated by an ingenious arrangement of an electric fan blowing against a propeller, the motion being naturally quite slow.

Dorr Company, New York, had an exhibit of special interest for paper mill engineers. This company has specialized in problems connected with the recovery of waste white water stock and the Door Save-All is widely used in the paper industry. The Dorrco Suction Pump, a flat valve diaphragm pulp for handling pulps and sludges attracted special attention.

Eastern Magnesia Talc Company, Burlington, Vt., exhibited specimens of true talc-magnesium silicate—in whole and pulverized form. This talc from mines in Vermont is largely used in the manufacture of certain grades of paper.

Eaton-Dikeman Company, Lee, Mass., had on display a variety of filter papers for use in funnel, filter press or filtering machine. Among the different grades shown was a new one, known as E. & D. filter paper, No. 631 reinforced. By means of a Shriver press demonstrations were given of the use of filter paper in conjunction with filter cloth.

Eimer & Amend, New York, exhibited a line of C. P. chemicals, white filter paper and chemical apparatus.

Electric Controller & Mfg. Co., Cleveland, Ohio, showed automatic high voltage compensators for A. C. Squirrel-cage motors, some of which have been installed in paper mills.

Electro Chemical Supply and Engineering Company, Paoli, Pa., gave out literature and illustrations of electrolytic chlorine cells and acid-proof cement.

Erie City Iron Works, Erie, Pa., had in operation a No. 2 Erie City 2,000 lb. capacity coal pulverizer of dimensions 11.1 ft. x 4.3 in., weighing 7,500 lbs. This apparatus occupied most of the space of the booth, but a graphic sketch was exhibited of the firm's new 3-drum inclined water tube boiler, as well as numerous photographs and pieces of literature describing the workings of the Lentz engine, pulverized coal equipment and various types of boilers manufactured by the Erie City Iron Works.

Filtration Engineers, Inc., New York, occupied a large booth near the entrance to the exposition and showed working models of their drying systems which are especially adapted for lime sludge, but which might also find application in the drying of pulp.

Foote Bros. Gear and Machine Co., Chicago, featured in their exhibit the I X L spur gear speed reducer and I X L worm gear speed reducer. Power machinery and special equipment were also shown.

Freeport Sulphur Company,—Parsons & Petit, New York, selling agents, exhibited pictures showing views of sulphur mines and distributed samples and literature.

General Electric Company, Schenectady, N. Y., provided a most attractive booth and gave demonstrations of electric welding, besides exhibiting fused quartz and flow meters. Electric control flow meters were featured as comparatively new devices. The arc welding exhibit suggested a means of

making repairs and building up worn parts of machinery in paper mills.

Great Western Manufacturing Company, Leavenworth, Kans., had in operation at their booth Type V Combs Gyratory Riddle or sifter. This is a screening machine operated by a motor placed above the sieve which can be attached to an ordinary lamp socket. The sieves are removable and can be equipped with any fineness of mesh desired. They are operated without brush or artificial pressure, being shaken and hammered in such a way as to prevent clogging of the mesh.

Emil Greiner Company, New York, showed a full line of laboratory apparatus and equipment, making the claim that it was in a position to furnish anything necessary for the equipment of a chemical laboratory.

Hendrick Manufacturing Company, Carbondale, Pa., displayed perforated metal screens for pulp and paper mills. Mitco Interlocked Steel Gratings were also shown, and attracted much attention.

C. W. Hunt Company, West New Brighton, exhibited the Mitchell Electric Vibrating Screen which moves the material being sifted upward and sideways at sixty times a second. This screen, like two others shown at the exposition could find application in screening various raw materials of the paper industry.

Victor Hybinette, Wilmington, Del., exhibited the Hybnickel acid and alkali resisting alloys in various forms, as nickel covered fourdrinier table rolls, breast rolls and couch rolls. By means of a new nickel-aluminum alloy the weight of rolls can be reduced 40 percent. Another alloy of nickel, copper and tungsten which has been recently developed promises to make a fourdrinier wire that will outlast all others. The alloys are made at the plant of Pusey & Jones Company in Wilmington, Del.

Hydraulic Press Mfg. Co., Mount Gilead, Ohio, had on exhibition an automatic molding press controlled by an electrically operated automatic control. The equipment was operated by a motor-driven hydraulic pump which formed part of the exhibit. A line of hydraulic valves and superheated steam valves was also shown.

International Nickel Company, New York, showed a collection of monel metal and nickel in commercial form, as sheets, rods, tubing, etc., as well as in small castings and other fabrications. Installations of monel metal and nickel were shown on a moving screen. Monel metal finds application in paper manufacture for filter presses, evaporator tubes, cylinder and washer wires, fly bars in jordan engines, etc.

Johns-Manville, Inc., New York, exhibited sections of insulated paper mill roofing and this was the subject of an address before the T. A. P. P. I. meeting at the exposition by a representative of the firm. Heat insulation in the pulp and paper industry is receiving much attention from Johns-Manville who manufacture various substances to provide for this. Specimens were on view at their booth with other building materials and power specialties.

Maurice A. Knight, Akron, Ohio, exhibited acid-proof brick and cement for digester linings, as well as acid-proof pipe, fittings and valves. The Knight apparatus, or equipment is of special interest to any one manufacturing or employing acids or corrosive solutions.

La Bour Company, Chicago Heights, Ill., exhibited centrifugal self-priming pumps driven either by motor or belt. These are said to be a novelty in pump construction. They are wet vacuum pumps capable of priming themselves and lifting water from twenty feet below the pumps.

La Motte Chemical Products Company, Baltimore, Md., showed the La Motte Hydrogen-Ion Testing Set, which was described by Dr. W. A. Taylor at the meeting held under the auspices of T. A. P. P. I. at the exposition. The application of hydrogen ion concentration for determining the acidity or alkalinity of liquids is finding increasing use in the paper industry.

Arthur D. Little, Inc., Cambridge, Mass., maintained a booth with comfortable chairs and a restful atmosphere for visitors, who were entertained with views of buildings, equipment and material with which the firm has worked. These were shown on a Spencer automatic delineascope. Reprints of some of Dr. A. D. Little's addresses before chemical societies were available to those who asked for them. One of these, "The Handwriting on the Wall," makes fascinating reading; it is a distinct contribution to chemical literature.

Mathieson Alkali Works, New York, exhibited specimens and literature on a variety of heavy chemicals, including "Eagle-Thistle" anhydrous ammonia, aqua ammonia, caustic soda, soda ash, liquid chlorine, bleaching powder, bicarbonate of soda, modified Virginia soda and purite, together with the Commonwealth products—benzoate of soda, benzoic acid, benzaldehyde and coumarin. Mathieson ammonia cylinders, liquid chlorine cylinders and other containers were also on display.

Mixing Equipment Company, New York, showed "Lightnin" portable mixers of a wide range of usefulness in industries where fluids or semi-solids are mixed. The mixers consist of long shafts of monel metal, bronze, or nickel, terminating in a screw propeller or fan-like device to agitate the fluid. The propellers are arranged at a downward-oblique angle which provides a motion in two directions. There are several uses possible for a mixer of this kind in a paper mill, and we were not surprised to learn that installations have been made in plants like Crane Paper Company, Mead Pulp and Paper Company, the Nashua Gummed and Coated Paper Company and the Champion Coated Paper Company.

Nash Engineering Company, South Norwalk, Conn., had one of the largest and most impressive exhibits at the exposition. It faced the main entrance and was seen by everybody arriving and leaving the building. A novelty seen for the first time was a synchronous motor drive for vacuum pumps and flatbox units. There were thus exhibited a No. 8 Nash Hytor Vacuum pump direct connected to G. E. synchronous motor, a No. 4 Jennings Hytor flatbox pump, also direct connected to G. E. synchronous motor drive. This construction, it will be seen, eliminates any couplings, as the rotor is mounted directly on the shaft. Altogether an exhibit of great interest to paper mill engineers.

National Homogenizer Corporation, Frankfort, N. Y., showed the Hurrell Homogenizer or colloid mill, which was the subject of an address by Dr. K. A. Pelikan at a meeting held at the exposition under the auspices of T. A. P. P. I. For the manufacture of rosin size with the minimum amount of alkali, this apparatus is especially adapted, as it provides colloidal solutions or dispersions. It is also recommended for use in the repulping of waste papers.

National Lime Association, Washington, D. C., showed lime and its sources. The exhibit included specimens of pulp, bleached and unbleached, as instances of the application of lime in the industries, but the scope for the use of lime is very great. The National Lime Association is a clearing house for information on the multifarious uses of lime.

New England Tank and Tower Company, Everett, Mass., exhibited the wooden tanks and agitator drives for which the firm is well known in the paper industry. Visitors to the booth were presented with useful memorandum pads on which pencilled notes can be made and washed off after the memoranda have served their purpose.

Norton Company, Worcester, Mass., showed specimens of fused alumina (alundum) in various forms; fused magnesia, silicon carbide (crystolon), grinding machinery; but not pulp mill grindstones, though these are being used to some extent in newsprint mills making their own groundwood. The exhibit also included glass wheels and non-slip floor tile and products, as well as refractory bricks and shapes.

Oliver Continuous Filter Company, San Francisco and New York, displayed a 3 ft. diameter by 2 ft. face Oliver filter of a type that is used at the wet end of a board machine, this being another field of the paper industry which has been added to the Oliver list. Olivers are now used in paper mills for thickening before bleaching, soda pulp washing, washing after bleach, as decker and save-all, in handling lime mud, etc. In addition to a new "Baby Oliver," 1 ft. dia. x 1 ft. face, the firm showed the Olivite acid-resisting centrifugal pump for handling corrosive liquids, either alkaline or acid.

Orville Simpson Company, Cincinnati, Ohio, exhibited the Rotex screen and sifter, which would appear to be extremely well adapted for use as a chip screen. A series of balls are kept

impinging on the wire by caroming from a pyramid-shaped obstacle and so keep the screen from clogging.

Pfaudler Company, Rochester, N. Y., exhibited an interesting series of glass enameled steel products that suggested certain applications in pulp and paper manufacture.

Philadelphia Quartz Company, Philadelphia, had various small exhibits showing the adhesive uses of silicate on paper. Samples of paper were shown in which silicate had been used as sizing in the beater. Doucil, the water softening agent, was exhibited for the first time. This is intended for domestic use in hard water districts. Samples of soap containing a liberal proportion of silicate were handed out with a view of demonstrating the advantages of silicate as an ingredient of laundry soap.

Research Corporation, New York, showed a working model of the Cottrell electrical precipitation process and distributed literature pertaining to the application of the process in the pulp and paper industry. A plate and wire type of precipitator is used for the recovery of soda ash in the treatment of black liquor of soda mills, as well as in sulphate recovery.

Robinson Manufacturing Company, Muncy, Pa., exhibited Gyro sifters, which are used to some extent as knotter screens and for wood chips in pulp mills.

Ernest Scott & Co., Fall River, Mass., who specialize in recovering trade wastes, did not exhibit any large scale plant, their exhibit consisting mainly of photographs of equipment for use in the black liquor evaporating department of pulp mills, together with many other industrial equipments such as are used in the chemical and allied industries. In addition there was shown a special scale model of a Scott Impregnating Plant, such as is used for impregnating various materials, including motor armatures, coils, wood, etc.

B. F. Sturtevant Company, Hyde Park, Mass., showed drying and vapor absorption apparatus, which are familiar in the paper industry.

C. J. Tagliabue Manufacturing Company, Brooklyn, N. Y., exhibited Tag-mercury recording thermometers, temperature controllers, pressure controllers, indicating thermometers and Tag-mercury industrial thermometers with the Tag Hespe red reading column. A novelty was a thermostatically controlled Tag Saybolt viscosimeter, an oil testing instrument for use in oil laboratories. Also shown were a group of other Tag oil testing instruments, Tag hydrometers and chemical thermometers.

Texas Gulf Sulphur Company, New York, had an educational exhibit, the booth being designed to set off an artist's painting depicting scenes at the mine in Texas, a diagrammatic sketch of the Frasch or hot-water method of mining sulphur being incorporated. The painting was illuminated in such a manner as to give motion to the various fluids which are involved in the mining operation.

W. S. Tyler Company, Cleveland, Ohio, had on exhibition the Hum-mer Electric Screen, which is finding increasing use in the screening of chips in sulphite mills. The firm is best known as a manufacturer of fourdrinier wires, of which specimens were shown and literature handed out.

Uehling Instrument Company, Paterson, N. J., featured their Apex CO_2 Recorder and Indicator for power plants. A specimen equipment was shown with all appliances. The Apex CO_2 Recorder furnishes a history of the operation of furnaces for every second of the twenty-four hours, showing when fires needed attention and when they received it, when and how often furnace doors were opened, or how often stoker speed and fuel bed thicknesses were changed.

United States Testing Company, New York, showed the Mullen Paper Tester, of which they are the New York agents. The exhibit included a number of microscope slides of rayon filaments, and cards announcing the chemical and physical tests made for various industries.

Weston Electrical Measuring Corporation, Newark, N. J., showed electrical measuring instruments adapted for service in pulp and paper mills.

Westinghouse Electric & Mfg. Company, East Pittsburgh, Pa., exhibited a variety of electrical equipment, most of which is familiar to pulp and paper men, but distinct novelties were also exhibited, as Ductile Thorium, and a new alloy steel for permanent magnets.

Miscellaneous Exhibits

Among miscellaneous exhibits the following firms had products or literature that appealed in one way or another to the representatives of the paper and pulp industry, who attended the exposition in large numbers:

Flexible Steel Lacing Company, Chicago; Morse Chain Company, New York; Miller Rubber Company, Akron, Ohio; National Slate Association, Philadelphia, Pa.; New Jersey Foundry & Machine Company, New York; Premier Mill Corporation, Geneva, N. Y.; Anti-Hydro Waterproofing Company, New York; The Bristol Company, Waterbury, Conn.; Bausch & Lomb Optical Company, Rochester, N. Y.; Celite Products Company, Los Angeles, Calif.; Crane Company, Chicago; Dings Magnetic Separator Company, Milwaukee, Wis.; Gruendler Patent Crusher & Pulverizer Company, St. Louis, Mo.; Standard Soapstone Corporation, New York; S. W. Straub Company, Philadelphia; Taylor Instrument Company, Rochester, N. Y.; Charles Warner Company, Philadelphia;

Paper Subjects at Chemical Show

Special Meeting of T. A. P. P. I. Brings Out Good Attendance

PULP and paper mill engineers who failed to visit the Tenth Exposition of Chemical Industries, held in New York during the week of September 28 to October 3, missed seeing a remarkable display of new machinery and equipment as well as new methods of production and control in the pulp and paper industry, not to mention other industries which are more or less dependent on advances in chemical science for their progress and development. At least one of the larger manufacturers of paper saw to it that several of his engineers and technical men made daily visits to the exposition and sat in at the various meetings for the discussion of new developments in chemical and engineering science. The attendance at the special meeting of the Technical Association of the Pulp and Paper Industry was larger than at any previous meeting held in connection with either the Paper Industries Exposition or the long series of Chemical Shows, save perhaps the meeting in Chicago a few years ago.

Use of Save-Alls

At the afternoon meeting of T. A. P. P. I. on Wednesday, September 30, there were nearly a hundred in attendance when president George K. Spence opened the proceedings by calling on C. T. Leander of the Dorr Company to present his paper on "The Development of the Save-All."

Mr. Leander reviewed the history of efforts to recover stock from white water which was formerly allowed to go to waste. In some cases more than 90 per cent of the white water stock is recovered by the use of efficient save-alls and it was noted that the ultimate finished product represented a well closed sheet with an improved finish.

Precautions Against Dirt

In paper machine rooms, where the effort is made to pass all white water to save-alls, it was necessary to take precautions against the possible entry of dirt into the papermaking system. It was suggested that a rearrangement of the pit under the wet end of the machine should be made in order to maintain the utmost cleanliness and exclude gutter water and washups from the floor. Nearly all of the water coming from the papermaking operation can be passed through a save-all and the recovered stock returned directly to the paper machine.

Construction of the Dorr Save-All

Describing the Dorr save-all, it was shown that this is primarily a single tank arranged with a number of steel diaphragms or trays in a wood tank. These trays represent shallow settling tanks or compartments one above the other, each having a peripheral outlet with a common central feed. The white water is fed to the center of the top of the tank and distributed equally to each compartment from that point. As the stock settles it is brought to the center of each compartment by a plough attached to a slowly revolving central shaft. Final thickening of the stock occurs in the lower compartment

and the common outlet in the center allows the stock to be pumped out continuously at a consistency of about 8 per cent to 1 per cent. The clarified water overflows each compartment and this can be regulated to give a clear discharge.

In regard to the disposition of the recovered stock, the sludge may be withdrawn continuously or at intervals to fill and discharge beaters. The recovered stock becomes incorporated in the finished paper.

Operating Data

Some operating data taken from an average of several months of operation in representative mills were cited, as follows:

1—Mill Manufacturing News Specialties. General arrangement of save-all includes gravity flow of white water from the paper machine to an inclined save-all and thence by gravity to the Dorr save-all. No trays present under the wire, and wire pit water used for makeup. Save-all feed includes excess wire pit water, overflow from couch pit and excess suction water.

Table I

	Lb. Stock/1000 gals.	% Stock
Feed to save-all	14.0	.168
Clarified water	.70	.0084
Return to beater tank	..... Approx.	.8%

Table II

	Gals./24 hrs.	Lb. Stock/24 hrs.
Feed to save-all	800,000	11,200
Clarified water	630,000	440
Return to operation	170,000	10,760

Recovery, 95%. Analyses of clarified water solids indicate practically 100% ash.

Several 24-hour runs were made to determine the paper machine performance after the save-all was installed. Total machine furnishes of 103.4% and 104.4% were obtained.

Table III

Lap stock and all other material weighed to beaters.

Net Wgt.		% Bonedry	Bonedry Wgt.	% Furnish
43,450	Sulphite	41.0	17,814	18.6
39,500	Book stock	39.8	15,721	16.4
131,100	Ground wood	30.7	40,248	42.0
	Broke		6,005	6.3
	Total fiber		79,888	83.3
	Clay		14,000	14.6
	Size		968	1.0
	Alum		2,765	2.9
	Silicate of soda		1,580	1.6
			99,101	103.4

2—Mill Manufacturing News. General arrangement of save-all includes gravity flow of the white water to the save-all, clarified water to waste, and the return sludge pumped to the paper machine mixing box. Save-all feed consists of the overflow from couch pit, excess suction water and part of the wire pit water.

Table I

	Lb. Stock/1000 gals.	% Stock
Feed to save-all	10.0	.12
Clarified water	.32	.004
Return to mixing box	..... Approx.	1.0%

Table II

	Gals./min.	Gals./24 hrs.	Lb. Stock/24 hrs.
Feed to save-all	165	238,000	2,380
Clarified water	145	209,000	67
Return to operation	20	29,000	2,313

Recovery, 97%. Analyses of clarified water solids indicates entirely "ground wood flour."

In addition to the fiber saving achieved, indirect results showed a noticeable improvement in the finish of the paper and a more closed sheet.

3—Mill Manufacturing Book Paper. General arrangement of save-all includes pumping the white water from the wire put up to the save-all with an intermittent gravity flow of the recovered stock to fill and empty beaters.

Save-all feed consists of entire wire pit water. The couch pit water containing the trim is pumped over a drum save-all, the discharge from the latter gravitating to the wire pit.

Table I

	Lb. Stock/1000 gals.	% Stock
Feed to save-all	16.2	.195
Clarified water	.8	.01
Return to beaters	Approx.	1.0% to 4.0%

Table II

	Gals./min.	Gals./24 hrs.	Lb. Stock/24 hrs.
Feed to save-all	300	430,000	6,950
Clarified water	Intermittent	330,000	264
Ret. to operation	"	100,000	6,686

Recovery, 95%. Analyses of clarified water solids indicate 80% to 90% ash.

The general results achieved have been a reduction in clay furnish from 500 lb. per beater to 300 lb. The clarified water flows by gravity to a clear well equipped with a float valve and a 2" water line, and is used for all showers on the paper machine. Water consumption, pumping from wells, has been reduced by 60 per cent and litigation for stream pollution eliminated.

New Alloys for Machine Rolls and Wires

Following the paper by Mr. Leander, Victor Hybinette described a new series of acid resisting alloys which could be used to cover Fourdrinier rolls as well as wires. A new alloy of nickel, copper and tungsten has been developed having a remarkably increased tensile strength, and if applied to Fourdrinier wires would much prolong their life.

In reply to a query by a member as to whether the new alloy had been used on calender rolls, Mr. Hybinette said it had not, as the work was in only an experimental stage at present.

Heat Insulation in Paper Mills

Representatives of Johns-Manville described recent work on heat insulation in the pulp and paper industry and a new type of insulated paper-mill roof, and they were followed by R. W. MacGregor, of Ernest Scott & Co., who discussed the evaporation of black liquor, condemning the use of disks and favoring the installation of vacuum evaporators.

The paper was discussed by President Spence, who instanced the benefits that result from insuring a clean liquor, free from fiber, entering the evaporator. He said the liquor should always be screened or filtered before it entered the evaporator.

Hydrogen Ion Concentration

Dr. W. A. Taylor was then introduced to present his paper on the colorimeteric determination of hydrogen ion concentration, first explaining the meaning of hydrogen ion concentration and its application to the paper industry. The subject of hydrogen ion concentration presents many difficulties to the man who would explain it, because it involves a knowledge of logarithms, and the meaning of pH determinations cannot be made clear without using logarithmic values.

Doctor Taylor succeeded admirably in making clear to his audience the colorimeteric method of determining H ion concentration or pH value. He exhibited a comparator set as made by the La Motte Chemical Products Company, of Baltimore, and showed how the method of determining hydrogen ion concentration is applied in the paper industry. It has long been recognized that the stock in the beater should show a slightly acid reaction, and it is in determining the exact degree of acidity or alkalinity that the comparator set is used.

Doctor Taylor's paper does not lend itself well to abstracting, and space limitations prevent our giving it in full in this issue.

Other Papers

Other papers presented at the meeting included one by Dr. K. A. Pelikan, illustrating the use of a colloid mill in the preparation of rosin sizing and the recovery of pulp from waste paper. The use of speed reducers in paper mills was described by J. R. Shays, of Foote Bros. Gear & Machine Company, which led to some discussion on the part of Fred P. Klund, of the Hammermill Paper Company, and by the asso-

ciate editor of THE PAPER INDUSTRY. J. R. Roberts presented a paper on two-sided effects and colored back water in the tinting of paper.

The meeting was brought to a close with a talk by John Coe on the use of hard rubber for suction boxes and doctor blades. Mr. Coe was there as the representative of the United States Rubber Company, Providence, R. I., in the absence of N. Madge, who was on the program to read a paper on the subject.

Practical Helps for the Mill Man

Time Checks on Unskilled Help

WHILE the greater majority of paper mill employees are skilled or semi-skilled, there still remains a large number who are merely trained and which cannot be classified as skilled labor. This includes specially trained office girls and boys, clerks, timekeepers, janitors.

Probably the biggest time waste in the large paper mill is found among these latter groups. In order to determine just how each trained general employee spent his time and to what advantage, one Holyoke plant for two weeks kept time records of the day's work by each employee coming under this class.

Office boys filled out slips which revealed the exact time they put in on each task, the amount of time spent in errands, who for, etc. An analysis of these reports over a period of two weeks revealed the possibilities of considerable savings by the elimination of duplicated and wasted effort.

It was held that a two weeks record was sufficient to determine upon an average day for each employee coming under this classification.

Pipe for Festooning Rolls

THERE are two influences tending to warp the wooden festooning poles in the drying part of the coating machine. One is the combination of heat and moisture and the other is the distinct, if only slight, pull on the paper. The tendency of the wooden poles to warp immediately brings cockling. Rods made out of ¾" or 1" pipe have been substituted for wooden poles with success. The pipe rode are shellacked every little while.

Paper Executive Uses Alarm Clock

IN order to keep appointments promptly, both of a business and social nature, one of the leading executives of a large New England paper mill has placed a small alarm clock on his desk which is set by his secretary for appointments. A conference arranged at eleven A. M. for three o'clock, for instance, will be prepared for by setting the clock for two-thirty and when the bell starts to ring, the executive, deep in some business problem, glances at his calendar and knows it is time to leave. When he has left to keep his engagement, the secretary again adjusts the clock for the next appointment.

Squirt Gun for Kerosene

ECONOMY in kerosene may be effected by the use of a squirt gun to shoot kerosene on to the calenders. The kerosene goes where you want it, and the quantity is more accurately gauged than with the open can beside the machine and the cup.

Coffee Service for Mill Operatives

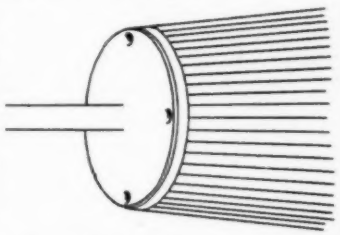
AN increasing number of paper mills are introducing coffee service in fall and winter to workers in the various units. The Holyoke plants in many cases have also served doughnuts to the help in the forenoon. This service is exclusively for the operatives engaged in heavy physical labor.

Tracing Executives to Departments

IN one of the larger paper mills, each department head, foreman and superintendent has a cardboard dial on his door with divisions noted as departments instead of numbers as would be the case for the time of day. When the executive leaves his office to go to some distant part of the mill, he simply sets the arrow to indicate that department and those searching for him will know where he is. In one case it was noticed that the dial had two arrows or pointers so that when the foreman was going to two departments on the same trip he could so indicate it. When his destination was only one point, he placed both arrows over that division on the dial, one on top of the other. The necessity for moving about the mill on the part of department heads makes this simple plan of great value especially in those plants where departments are scattered among widely separated building units.

Strengthening Jordan Plug

TO PREVENT the Jordan plug from breaking, a steel cap is placed over the small end of the ring, using four good sized bolts to hold it tight. It is said that the wearing qualities of the plug are increased fully ninety per cent by this application.



Increasing Life of Dryer Felt

DRYER felt life has been greatly increased in one mill by two simple changes. Big holes were cut in the floors of the machine pits. These holes are six feet long by the width of the pit. Reinforcing wire was used to prevent men obliged to enter the pit from falling through the floor. The increased supply of dry air resulting from the natural circulation dispelled pockets of moisture laden air in the pit and in the pinches of the felt. An accompanying change was the removal of a good deal of the weight from the automatic stretches. With properly adjusted automatic guides there is no need for tight dryer felts, and the removal of the strain on the felts gave them additional life.

Safety Kink on Calender Rolls

WHEN the calender roll becomes covered with paper, where there is no doctor, the papermaker often takes his knife to the layers to get them off. If the hand slips on the knife there is a badly cut hand, and if the knife goes into the calender pinch sometimes the hand goes too. A well-known safety man says: "Take a half-round bastard file and put a big wooden handle on it. Sharpen the point end and put it in a convenient pocket on the calenders. There is nothing to cut the hand, and the handle should be made so big that it will not go through the calenders."

Easy Method to Dump Beater

THE necessity of scraping the bottom of a beater into the round discharge pipe has been eliminated in one mill by a flap valve. This valve is situated just before the beater roll. It extends all the way across the beater channel. When it is time to dump, the valve is opened and it forms a dam, which gathers the stock into the discharge pipe without any scraping.

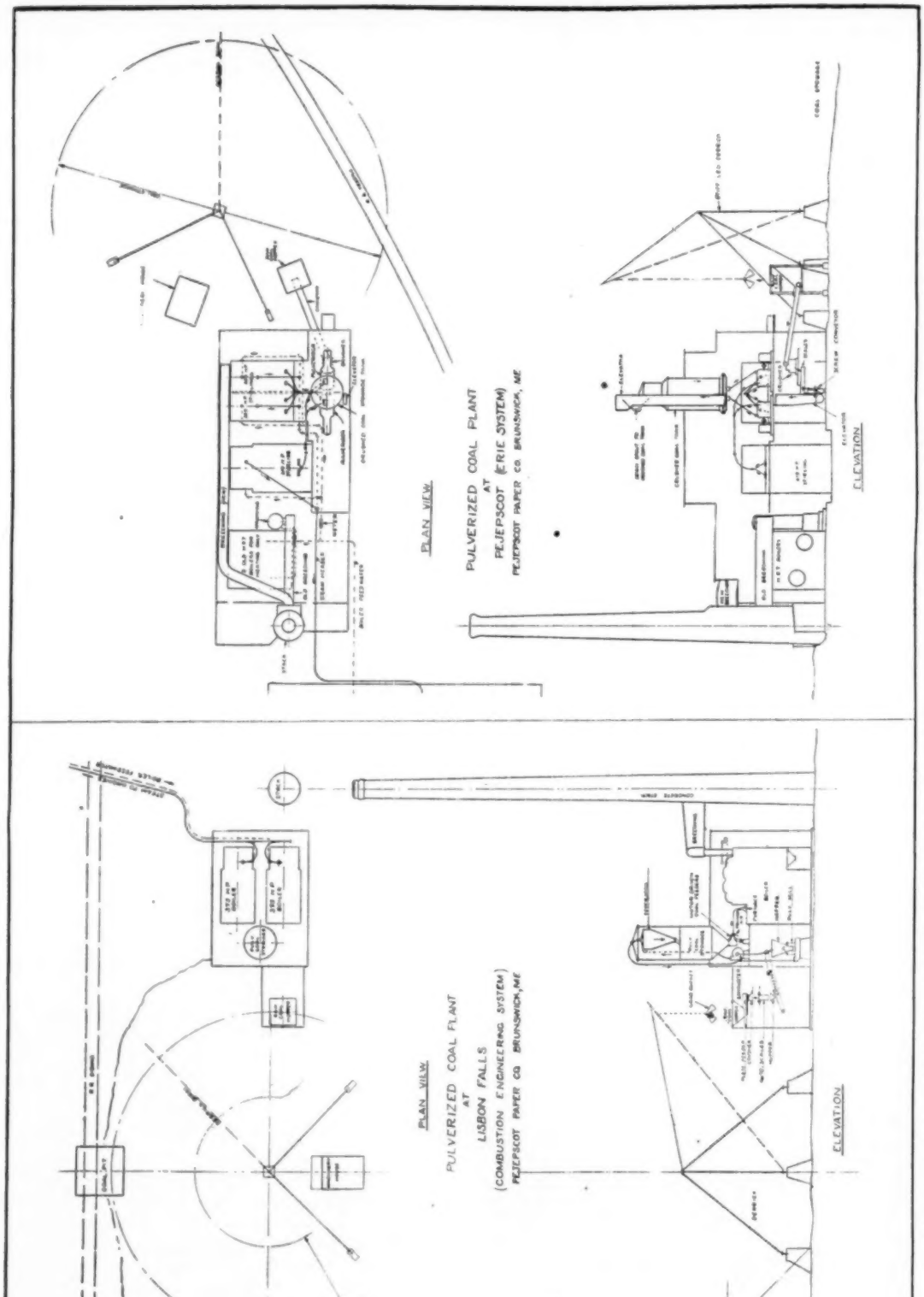
Tappi Fall Meeting in Kalamazoo

The fall meeting of the Technical Association of the Pulp and Paper Industry will be held in Kalamazoo, Mich., at the Park American Hotel, October 14 and 15, 1925.

Among the topics to be discussed are: 1—The testing of paper to indicate its suitability in use; 2—Paper drying and means for securing uniform distribution of steam in the drying cylinders and for the removal of air and condensate; 3—White water waste and its prevention. Reports on recent developments.

On the evening of October 14 the fall dinner will be held.

F. C. Clark, secretary, Hawthorne Paper Co., Kalamazoo, a former vice-president of Tappi, has charge of the local arrangements.



Elevations and plans of the pulverized coal plants of the Pejepscot Paper Co., Brunswick, Maine, at their Lisbon Falls and Pejepscot mills

Pulverized Coal System of Pejepscot

By E. R. COMEE, Chief Engineer

In the August issue of The Paper Industry, editorial mention was made of the smokeless combustion being achieved at the Lisbon and Pejepscot mills of the Pejepscot Paper Company, Brunswick, Maine, and of the cleanliness and economy of the system which yields no more than a wagon load of ash in a week's combustion of coal.

Mr. E. R. Comee, chief engineer of the Pejepscot Company, has prepared the following description of their two pulverized coal plants, together with a brief statement as to their operating results and a diagrammatic sketch of each plant.

ONE plant uses the unit system, which pulverizes the coal as used, and the other is the storage system, which pulverizes the coal and stores it, using from the storage as needed.

Unit System Equipment

The unit system is at our Pejepscot Mill and the equipment consists of the following:

Coal Handling Equipment: stiff leg derrick; raw coal hopper; conveyors and bucket elevator; Pennsylvania crusher —18"x18"; Richardson automatic scales; crushed coal storage tank—capacity 50 tons; crushed coal feed pipe to pulverizers.

Pulverizing and Burning Equipment: two No. 4 Erie City Iron Works pulverizers, Seymour type; four Erie City burners on 610 H. P. Stirling boiler; two Erie City burners on each 350 H. P. Stirling boiler; fuel piping from pulverizers to boilers.

Boilers: two 350 H. P. Stirlings; one 610 H. P. Stirling; all boilers equipped with Diamond soot blowers.

Water Screens: for 350 H. P. Stirlings—1 pass, 90 sq. ft. of heating surface per boiler; for 610 H. P. Stirling—single pass, 216 sq ft. of heating surface.

Furnace: both 350 H. P. Stirlings are set in battery and have a furnace volume of 1,637 cu. ft. for each boiler; the furnace for the 610 H. P. Stirling is Combustion Engineering Company's design and M. H. Detrick's construction, having a furnace volume of 4,560 cu. ft.

Recording Instruments: steam pressure gauges; draft gauges; Republic CO_2 recorders; simplex venturi water meter; Republic steam flow meters; Foxboro feed water temperature recorder; Foxboro flue gas recording thermometer.

Feed Water Equipment: Permutit water softeners; Cochrane open type heater; Buffalo centrifugal feed pump.

Stack: brick—5 feet diameter by 136 feet high.

Operation of Unit System

The operation of the plant is as follows: The derrick handles the coal from the cars directly into the raw coal hopper or into the storage pile. The derrick also retrieves it from the storage pile into the raw coal hopper. From the hopper, coal is conveyed to the crusher, from which it drops into the automatic scales and is weighed. From there, it is conveyed to the crushed coal storage tank, which has a capacity of fifty tons. From the coal tank, the coal is conveyed by means of a gravity feed pipe to either or both pulverizers. The rate at which coal is fed to the pulverizers is controlled by a circular plate feeder. Each pulverizer is driven by a 75 H. P. variable speed motor, direct connected. The pulverizer consists essentially of a cylindrical housing containing a rotor mounted on a shaft, the rotor being composed of pulverizing elements and a fan. The fan draws in sufficient air to propel the coal through the pulverizer and drives it into the furnace —at the same time supporting the combustion. Air is admitted to the pulverizers with the coal and also at the other end of the pulverizers, where there is a fan which takes the coal after pulverization and blows it, with the air, to the burners. The feed piping from the pulverizers to the burner is so arranged that either or both pulverizers can feed any or all boilers.

We try to keep the coal pulverized to a degree of fineness so that 80 per cent of it will pass a 200 mash screen, but in order to accomplish this whenever the coal is wet, it reduces the capacity of the pulverizers materially.

About 50 per cent of the air is taken into the pulverizers with the coal. The other 50 per cent is taken through the walls of the furnace and discharged through the front wall at right angles to the flow of the primary air and coal. The burners are set in a vertical position so that they discharge the coal downward into the furnace.

All of the damper control, feed water control, primary and secondary air control is done by the boiler operator.

The two 350 H. P. Stirlings have been operating since April, 1923. The 610 H. P. Stirling has been operating since January 5th, 1925. The load is carried on the 610 H. P. Stirling or on the two 350 H. P. Stirlings. During the winter, it is necessary sometimes to run one 350 and the 610.

Operating Results of Unit System

The plant is operated by two men per shift. Copy of the operating results for an average month is as follows:

1.	Steam Press. (Lbs. per sq. in.)	135
2.	Temperature of Steam	358.3
3.	Feedwater (a) Temperature Entering Boilers	208.6
4.	Flue Gas (a) Temperature Leaving Boilers	462
5.	Fuel Used (as fired) (a) Coal	1,819,000
6.	Equivalent Dry Fuel Used (Total)	1,704,403
7.	Total Weight of Water Feed to Boilers (Feedwater Meter)	18,608,000
8.	Factor of Evaporation for Water Entering Boilers	1.0478
9.	Total Equivalent Evaporation from and at 212°	19,497,462
10.	Equivalent Evaporation F&A 212° per lb. Equivalent Dry Fuel Used	11.44
11.	Equivalent Evaporation F&A 212° per B. t. u.	7.87
12.	Per cent Rating Developed	145.4
13.	Efficiency of Boiler, Furnace and Grate	76.5
14.	Final Coal Analysis: (a) Moisture (As Fired)	.063
15.	B. t. u. Per Lb. Dry Coal	14,527

Storage System Equipment

The storage system is at our Lisbon Falls Mill and the equipment consists of the following:

Coal Handling Equipment: Stiff leg derrick; raw coal Hopper; plate feeder; 18"x18" Jeffrey crusher; Richardson automatic scales conveyors.

Pulverizing and Burning Equipment: Raymond 6 roll pulverizer, with Gagnan automatic control; No. 12 Raymond exhauster; pulverized coal bin—12' dia. by 12½' high, cone botton 6' deep, tapering to rectangle 2'x5' 8" at feeders; four Lopulco 5" duplex No. 3 feeders; two Standard Lopulco burners for each boiler; primary air blower—Buffalo Type "R" size 40.

Boilers: Two 375 H. P. Stirlings.

Water Screens: One pass 128 sq. ft. per boiler.

Furnace: Combustion Engineering Company's hollow walled, flat bottom, 2,590 cu. ft.

Recording Instruments: Steam pressure gauges; pressure and draft gauges for air; Republic CO_2 recorders; simplex recording venturi meters; Foxboro flue gas recording thermometer; Foxboro feed water temperature recorders.

Feed Water Equipment: One open Cochrane feed water heater; Worthington 2½" centrifugal pump; Buffalo 2½" centrifugal pump.

Stack: Reinforced concrete—7' dia. by 175' high.

Operation of Storage System

The operation of the plant is as follows: The coal is handled from the cars to the raw coal hopper by means of the stiff leg derrick, which is also used to put coal into the storage pile and retrieves it from this same pile to the raw coal hopper. Under this hopper is a plate feeder which feeds the crusher from where it drops into the Richardson automatic scales, from whence it is conveyed from the hopper of the Raymond

mill, which does the pulverizing. The pulverized coal is sucked out of the top of the Raymond mill by an exhauster which blows the coal and air to a cyclone separator on top of the pulverized coal tank, the pulverized coal dropping into the tank and the air returning to the suction of the Raymond mill.

The pulverizing equipment only has to run between four and five hours a day to take care of the plant.

At the bottom of the coal tank are four feeders, speed of which is controlled, which takes care of the amount of coal to be furnished by each feeder. Directly below the feeders is the primary air blower, which furnishes the air. At the end of the feeders is a 3" pipe direct to a Lopulco burner, two burners for each boiler.

The secondary air is drawn through the walls and amounts to about 80 per cent of the total air.

This plant has been operating since January 1st, 1924, and the boilers have been operating all the way from 100 per cent rating to 260 per cent. The load of the mill can be carried on one 375 H. P. boiler. However, the operating results show that during the winter months the economy is better when running two.

Operating Results of Storage System

A copy of the operating results for a good average month are as follows:

1.	Steam Pressure (Lbs. per Sq. In.)	125
2.	Temperature of Steam	352.9
3.	Feedwater (a) Temperature Entering Boilers.	210.1
4.	Flue Gas (a) Temperature Leaving Boilers	540
5.	Fuel Used (as fired) (a) Coal	2,048,500
6.	Equivalent Dry Fuel Used (total)	1,913,299
7.	Total Weight of Water Fed to Boilers (Feedwater Meter)	21,154,000
8.	Factor of Evaporation for Water Entering Boilers	1.0451
9.	Total Equivalent Evaporation from and at 212°	22,108,045
10.	Equivalent Evaporation F&A 212° per lb. Dry Fuel Used	11.55
11.	Equivalent Evaporation F&A 212° per 10,000 B. t. u.	7.88
12.	Per Cent Rating Developed	131.81
13.	Efficiency of Boiler, Furnace and Grate	76.8
14.	Final Coal Analysis (a) Moisture (As fired)	.066
15.	B. T. U. Per Lb. (Dry)	14,650

Practical Method of Painting

Paint Gun Supplants Hand Brush

FACTORY painting has been a recognized element in factory management for several decades, largely because of the importance of reflection and diffusion of light from the painted wall. Figures are scarcely necessary to prove to the practical manufacturer that multiplication of the sources of light is comparatively ineffectual and quite expensive unless a well-painted interior is maintained to make the most of light that is available.

When painting ceased to be regarded as an element of construction—or perhaps of decoration—it naturally took an important place among the maintenance problems of the factory, problems which managers are accustomed to solve with their own labor and at their own convenience in point of time.

This explains, perhaps, the strides that are being made by gun painting, both in the inside and outside maintenance work of industrial plants. It requires long practice to be even a tolerably good hand painter, while an hour's instruction with a modern paint gun will often make the ordinary factory handy man just about as skillful as the man with longer practice.

The speed of application in gun painting varies with the surface and the type of apparatus used, as well as the natural dexterity of the user, but a factor of 3 to 1 in favor of the smallest type of spraying device, or of 10 or 15 to 1 in case of the larger paint guns, fairly represents the advantage in speed of mechanical painting over hand painting.

When an $8 a day man applies $6 worth of paint per day by hand, you have a labor cost of 55 per cent and a material cost of 45 per cent. When an $8 a day man triples this record of application and puts on $18 worth of paint in a day, you have a labor cost of only 30 per cent and a material cost of 70 per cent. In the more extreme case suggested, where the $8 man applies $60 to $90 worth of paint in a day, we approach a condition in which the labor cost is about 12 per cent or even about 8 per cent of the total cost of the job, instead of 55 per cent.

What this can mean in the possibility of more frequent painting and continuously better morale and efficiency is apparent at first sight. But the advantage is not confined to economy, for in the miscellaneous rough surfaces that are found inside and outside of industrial plants, the pneumatic paint gun has an advantage over the brush painter. The gun is never impeded by the nature of the surface, while the brush often encounters hard going. The ease with which a paint gun satisfies suction and builds up a surface also accounts for the fact that one coat from a paint gun often suffices, where two brush coats would be necessary to give an equally smooth effect.

Painting roof with use of gun

Distinct Advantages

The reluctance with which plant managers view the necessity of painting is due, first, to cost questions; second, perhaps to fear of interruped routine and finally to their dislike of introducing into their plant a working force not directly under their control and often subject to rules that are at variance with the spirit of the operating organization.

Gun painting offers a degree of relief from each of these sources of apprehension. The cost is notably less when one's own unskilled labor, working with the fastest labor-saving painting devices, is able to do the work of 10 or 15 brush painters. The inconvenience of painting any department is generally proportionate to the number of painters employed and the length of time they take in getting through that department. Secondarily, the inconvenience of the paint job is proportionate to the ladders and scaffolding necessary.

Reducing the number of men, therefore, reduces the inconvenience. At least one equipment is available which has an extension arm that works at ordinary ceiling heights and minimizes the need of ladders and scaffolding. Many managers take further satisfaction in thought that the plant painter is directly under their own plant rules and plant discipline—avoiding friction with the operating force and the necessity of giving directions through a contractor.

One of the wise precautions in undertaking a gun painting job is to make sure that you are not using a paint unsuitable to your equipment. There has come to be wide difference in types of painting equipment, each excellent in its place. The equipment that will yield maximum economy on a large job of industrial painting might be wholly unsuitable for painting a small object of manufacture, and vice versa.

When a successful job of painting has been completed, it only remains to standardize the method and schedule the reasons in which various portions of the plant will be painted. Most manufacturers are heartily willing to keep their plants in a continual state of brightness and freshness, if the bugaboos are once eliminated from maintenance painting.

News Briefs from Washington

REPORTS from the Consuls and Commercial Attaches of the Department of Commerce received during the past month emphasize the following conditions in the paper industry abroad:

The British Paper Industry.—Conditions in the British paper industry have been described as generally poor during the past six months, with no immediate improvement in sight. The renewed demand from Australia has stimulated production in the British newsprint mills, but many wrapping paper mills are closed down or on the point of suspending operations owing to lack of orders. This section of the industry has suffered most keenly during the past two years. Beside wrapping papers, foreign competition has been most keenly felt by the mills making wood-free papers and a few mills in this group have also been forced out of business. Trade has been especially poor in the fine paper section. Some of the larger houses are sustained by export orders, but the mills depending on domestic orders are said to be experiencing difficulty in keeping their machines busy. A distinct tendency on the part of purchasers to favor lower quality papers has been noticeable.

Swedish Pulp Prices Advanced.—In Sweden the prices of pulp were advanced during the latter part of August, according to a report from Vice-Consul Ebling at Stockholm. The latest quotations for first quality cellulose per 100 pounds were as follows: Bleached sulphite, $3.65 to $3.95; easy bleaching sulphite, $2.67 to $2.86; strong sulphite, $2.43 to $2.61; strong sulphate, $2.55 to $2.74. Mechanical ground wood is quoted at from 68 cents to 73 cents wet and from $1.45 to $1.64 dry. Satisfactory sales of chemical cellulose for 1926 delivery, largely to United States purchasers, have been reported by the American Commercial Attache.

It is reported that the Bates Valve Bag Company of Chicago recently organized a subsidiary Swedish corporation known as the Bates Papersack Aktb. A branch factory is already in operation at Limhamn, near Malmo, with 112 workers and a daily production capacity of 5,000 bags.

Firm Market in Norway.—According to a report from Consul General Snyder at Oslo, Norwegian pulp prices firmed markedly during the first half of August and the following prices per 100 pounds ruled on that market on August 15: $4.38 for bleached sulphite, $3.13 for easy bleaching sulphite, $2.92 for strong sulphite and sulphate, and 83 cents and $1.71, respectively, for wet and dry mechanical ground wood. Paper prices remained unchanged except for newsprint which declined $1.22 per ton.

All attempts at wage reduction in Norway have met defeat and industry is in a difficult position because of the appreciation of the crown, shutdowns being threatened by a number of pulp and paper mills. Exports are, however, continuing, according to the American Commercial Attache, their totals during August being as follows: Pulp, $273,000; and paper, $148,000.

Esthonia Mills to Make Fine Papers.—Consul Groeniger at Reval, Esthonia, reports that the mills at Rapina, which have heretofore specialized in roofing boards, are contemplating the manufacture of fine papers for bank notes, bills, drafts, and similar purposes. These mills state that they will be able to consume all of the cotton waste in the country and that it will be to their interest to have the export duty on this class of paper stock materially increased.

Board Production Increasing in Lithuania.—According to Consul Gerrity at Kovno, Lithuania, there were no board mills in the country prior to the war, but in 1923 two factories were established. In March, 1924, the number had increased to five, and at the present time there are 16, of which only two can be designated as large. Their joint capital is said to approximate $150,000 and they have an annual turnover of about the same amount. The industry as at present organized employs about 270 persons, most of the work being done by hand by laborers of both sexes. Practically the entire output is consumed locally, chiefly as boxes for the cigar, cigarette, and candy trades. Early this year, however, Lithuania entered the British and German markets and sales to the amount of nearly 200 metric tons have thus far been made.

Competition among local manufacturers is keen, prices being determined almost entirely by the cost of raw materials. As a result the mills are continually seeking sources of supply for raw materials at low prices. It is stated that producers can sell their goods locally on terms which include the acceptance of notes bearing interest of from 21 to 24 per cent annually, which places an additional handicap on them, especially at times when competition forces a reduction in price.

Situation in German Paper Industry.—In Germany the market for fine papers showed improvement in August as compared with previous months, especially in writings, prices for which continue firm. In the Frankfort district, according to Consul General Dumont, export orders for silk tissues increased, while both the foreign and domestic orders for cigarette paper fell off heavily due to unfavorable conditions in the European cigarette industry generally. German manufacturers are complaining of sharp French and Belgian competition in foreign markets. The demand for printing papers containing groundwood continues steady and inquiries for book papers have increased. Prices are generally considered high, this condition being attributed to the upward tendency of pulpwood prices and the firmness of the market for both mechanical and chemical pulps.

The larger German mills have been forced to use mechanical pulp from Czechoslovakia, Poland and Finland, but the domestic supply of chemical cellulose has been ample. The production of straw cellulose is increasing, owing to a harvest somewhat above expectations, and prices for this product are likewise on the upgrade. The demand for board continues steady despite slight price increases. Faint improvement has been noted in the market for waste paper, but inquiries for rags were small and prices have been depressed.

In Dresden section conditions have been generally satisfactory, but imports of paper waste and similar stocks have declined owing to the prices asked. Present price tendencies emphasize the probability of a continuation of the shortage that has been felt in these lines. Wages and production costs throughout the paper industry are generally increasing and have been the cause of a general upward tendency in prices. It is believed that the increased prices expected to manifest themselves in the board, box, and carton market for similar reasons will be reflected in a diminished volume of sales.

Paper Production Normal in Czechoslovakia.—The American Consul at Prague, Czechoslovakia, states that the prices of fiber pulp and kraft and newsprint papers on the open market remain firm except for a slight decrease in news. Mills have not reduced their production and sales have continued normal and steady.

New Kraft Mill in France.—The Societe Anonyme des Papeteries de Gascogne with a capital of 22,000,000 francs (about $1,034,000 at present exchange rates) has just been formed at Paris for the purpose of constructing and operating a paper mill at Landes. The annual capacity of the mill, according to Consul Raymond Davis, is to be approximately 8,000 tons of kraft paper to be made by the Rinman method. Pulp wood obtained from the adjacent French pine forests is to be used. A recent report placed before the general meeting of the Societe l'Alfa (Esparto Society) also states that the mill at Traille which began operation late in 1924 is now producing around 500 metric tons per month.

Government Support of Industry in Brazil.—There is noth-

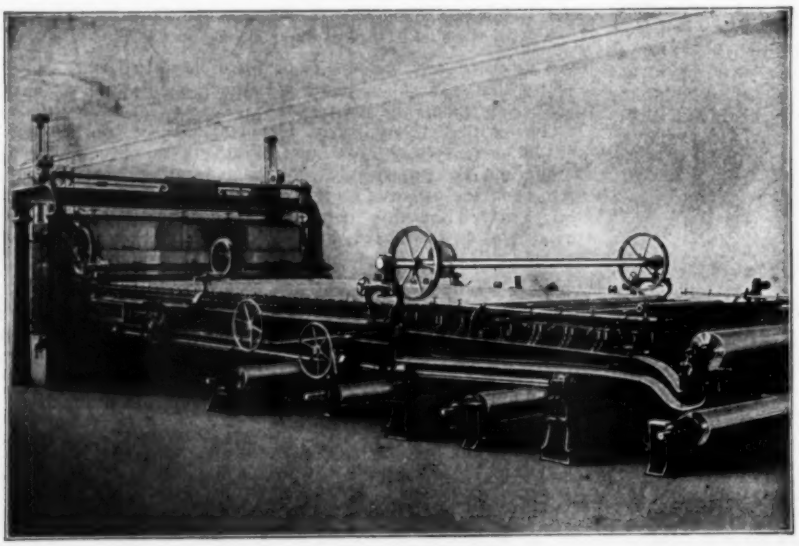
Press the BUTTON!

NO ROLLS~ NOR SUCTION BOXES TO REMOVE.

The NEW BELOIT FOURDRINIER

PRESS the button, and the New BELOIT Removable Fourdrinier operates instantly—smoothly and efficiently. There are no rolls, nor suction boxes to remove, no heavy lifting.

Possible injuries to wires are largely eliminated. Time required amazingly small. Some mills have practically proven that the time saved in one year is nearly enough to pay for the extra cost of the remarkable feature, when considering the increased production.



This is but one of the many features of the **NEW BELOIT FOURDRINIER.**

Now in Successful Operation

Investigate this modern labor and time-saving marvel. Write for special BULLETIN No. 9

Beloit Iron Works **Beloit, Wis., U.S.A.**

ESTABLISHED SINCE 1858

ing of special importance to report from Latin America. The American Consul at Bahia, Brazil, states that Law 1790 of July 10, 1925, grants exemption from State taxes for a period of 15 years to any paper mill using domestic raw material that may be established, and further states that export taxes on its product shall not exceed 10 reis per kilogram during the same period. The Government is anxious to do everything possible to assist in the establishment of a paper industry in the country. At the same time it is reported that the Compania Industria Papeis e Cartonagem, with headquarters at Sao Paulo and a branch in Rio de Janeiro have filed a petition of voluntry bankruptcy with liabilities placed at $8,500,000.

India Protects Bamboo Paper Industry.—In the Far East protection has been granted to the bamboo paper industry in India by the imposition of a duty of 1 anna (about 2 cents) per pound on all writing paper and on printing paper other than newsprint, containing less than 65 per cent of mechanical pulp. This new duty will remain in effect until March 31, 1932, according to the American Trade Commissioner at Bombay.

Canadian Output Not Expected Abnormal.—The American Consul General at Montreal states that at the present time the capacity of the Canadian mills does not promise to be increased to an abnormal extent. During the whole of 1925 the increase is expected to be about 660 tons per day, of which only 100 tons have so far materialized. The remaining 560 tons includes two 80-ton plants of the International Paper Company at Three Rivers, operative in December, two 100-ton mills owned by Price Brothers, and one 200-ton mill the property of the Wayagamack Company. These additions are not expected to affect the newsprint market until after the first of January and will make the Canadian total 5,760 tons per day, or 1,728,000 tons annually, as compared with 1,530,000 tons in January of this year. For 1926, plans have been completed and orders given for newsprint mills in Canada with a total capacity of 325 tons per day.

It is specially noted that Newfoundland entered the field in August with a 400-ton mill at Corner Brook. While most of the previous output of the Newfoundland mills went to England, the increased supply is now utilized to supply the American market.

Test Development at Bureau of Standards

The Bureau of Standards has just completed a series of tests on acidity control in paper making, a determination of acidity having now been made a regular part of all paper making operations at the Bureau's mill. A report has been prepared showing that the optimum acidity at the paper machine is from 5.0 to 5.5 pH. The amount of paper maker's alum required for satisfactory results is minimum at the optimum value, and the quantity in excess of that required to produce this value has no effect on sizing.

The Bureau of Standards also warns that in the preparation of casein for use as an adhesive in coating paper, the importance of the size of the particles must not be overlooked. A sample of casein recently rejected by a coated paper manufacturer was sent to the Bureau for test, the material being in coarse lumps, some as large as ¼ by ½ inch in size. While it could not be dissolved in this form with the usual mill coating solvents, upon grinding to suitable size it was found to be readily soluble and a very high quality material in every respect. For use in coating paper casein should pass through a 40-mesh screen. Grinding mills of French buhr-stone and a screening system such as that used in commercial coffee plants are suitable for reducing casein to the desired fineness.

American Schaeffer & Budenberg Corporation, of Brooklyn, N. Y., manufacturers of recording gauges and thermometers, controlling devices and tachometers, are transferring their Boston plant to Worcester, Mass., where improved facilities are at their command. They are establishing their New England sales office in Boston, where commodious offices have been engaged in the new Chamber of Commerce Building, 80 Federal street.

Import Committee Submits Annual Results

The Import Committee of the American Paper Industry has just sent to its subscribers a striking record of achievements during the past year in checking the unfair importations of foreign paper.

The report shows that during the fiscal year just closed the Import Committee took up 161 separate types of violations of the custom laws, some of these cases involving a single principle including as many as forty separate importations.

Many of these cases are now before the customs courts, while final decisions have been reached in others which have been of the greatest importance to the domestic industry.

The work of the Import Committee in the annual report is classified by groups, and includes the following cases in which a successful conclusion has been reached:

Newsprint—Definition of Standard Newsprint promulgated by Treasury Department, so phrased as to eliminate poster, news liner, catalogue, half tone, hanging and similar special papers from duty free provisions of the Tariff Act. Railroad writing offered free of duty as standard newsprint held dutiable as writing paper. Railroad writing in rolls, offered free of duty as standard newsprint held dutiable as printing paper. Poster papers offered free of duty as standard newsprint held dutiable as printing. Half tone news offered free of duty as standard newsprint held dutiable as printing paper. Product of Swedish newsprint mill embargoed until it consented to allow American government agents to see its books for custom purposes. Paper offered free of duty as standard newsprint held dutiable as hanging paper.

Book Papers—Treasury Department rules certain light weight papers offered as printing be classified as bible. Paper offered free of duty as standard newsprint held dutiable and classified as colored book. Box liner containing cotton, offered free of duty as standard newsprint held dutiable as printing. Super book paper reappraised and given higher valuation. Collotype paper offered as printing, held to be special paper, dutiable at higher rate. Heavy offset paper offered as board, found to be dutiable as printing paper.

Wrapping Paper—German sulphite wrapping and bag paper ruled to be dumped and subject to anti-dumping as well as regular high duties. Kraft wrapping paper found by Customs Court to be undervalued. Kraft from one Canadian mill found to be undervalued, and all ports instructed to hold further shipments for investigation under anti-dumping act. Swedish kraft mill's product embargoed until it allowed government agents to see its books for determination of true export prices. Treasury Department rules against importers who try to enter wrapping paper as board with one-third of wrapping paper duty.

Writing and Fine Papers—All so-called canary news, railroad manila and railroad writing papers when in sheets found to be writing paper, not standard newsprint duty free. Paper offered as printing, classified as manifold. Special finish drawing paper held dutiable under higher classification. Valuation advanced on onion skin paper. Higher valuation placed on wedding bristol. Embossed cover and body stock of writing paper grade held for higher duty under special provisions for embossed papers.

Boards—Treasury Department orders vulcanized fibre classified under special provision, not to be admitted as board. Saturating felt from Czecho-Slovakia held for countervailing duty. Valuation increased on Austrian pulp board. Countervailing duty applied to Canadian roofing felt.

Specialty Papers—Proper marking ordered of vegetable parchment with country of origin. Duty raised on vegetable parchment scrap. Foreign imitation parchment paper denied further admission as wrapping paper, and held for 3 cents and 15 per cent ad valorem duty, instead of 30 per cent as for wrapping. Dumping of half-fine gold paper not found, but valuation raised. Classification raised on metal coated glassine papers. Valuation increased on bowl papers. Valuation raised on baryta coated papers.

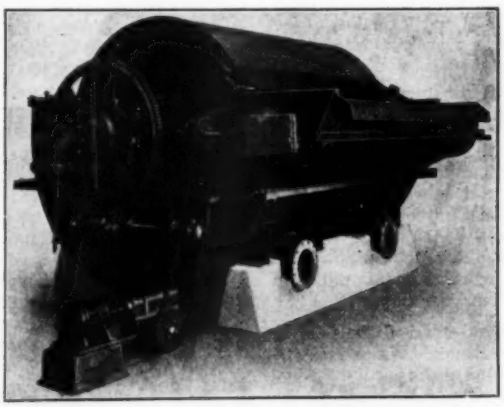
The committee came formally into existence Oct. 1, 1924, with Warren B. Bullock as manager, and Henry A. Wise as general counsel, and later engaged John R. Hecht, formerly of the Customs Service, as customs expert. The committee itself is composed of representatives of the various groups of the industry, and has laid down its policy as being the enforcement of existing customs law on paper.

100%

Just what kind of a

FEELING

would you have if an investment
brought in that kind of return?
And in three or four months at that?



Put an OLIVER to work.

on

White Water Waste

and you will experience that

FEELING

Other Paper Mills have done it

Your Mill can also use

OLIVERS

in many other places

Oliver Continuous Filter Co.

San Francisco
802 Cunard Building

New York
1422 Aeolian Building

London
11 Southampton Row

Johannesburg, South Africa
E. L. Bateman, The Corner House

Supply and Equipment Association Will Hold First Annual

The first annual meeting of the members of Supply and Equipment Association, Inc., of the American Paper and Pulp Industry, will be held at the Old Colony Club, in the Waldorf-Astoria Hotel, New York City, on October 15, 1925, at 11 o'clock, A. M.

In addition to the regular business to be transacted, the members will be addressed by the following: Norman W. Wilson, president, American Paper & Pulp Association; Henry W. Stokes, president, The York Haven Paper Co.; Charles A. Gordon, vice-president, Oxford Paper Co.; E. T. A. Coughlin, president, American Paper & Pulp Mill Superintendents' Assn.; George E. Smith, manager, purchasing department, International Paper Co.; H. B. Mills, manager, purchasing department, Oxford Paper Co.; Dr. Hugh P. Baker, secretary, American Paper & Pulp Association.

The association hopes to have a 100 per cent attendance, as a number of interesting facts will be brought out at the meeting.

Lectures on Program at Coming Power Show

All of the first two floors of the Grand Central Palace, New York City, and ninety per cent of the space on the third floor has been contracted for by exhibitors at the Fourth National Exposition of Power and Mechanical Engineering, to be held from November 30 through December 5, 1925. This is ample evidence that the coming Power Show will present more than its usual quota of the newest devices and apparatus that obsolete rapidly the power plant of today.

One of the features of the show will be a series of lectures on the important developments in power and mechanical equipment during the preceding year. These are planned primarily for students, but will be of general interest to mechanical engineers who wish to bring up to date their information on the rapid development in all phases of mechanical engineering.

The lectures will be scheduled to avoid conflict with the sessions of the annual meetings of the American Society of Mechanical Engineers and the American Society of Refrigerating Engineers, which will be held in New York during the same week.

As most of the lectures deal with subjects that will be well represented by exhibits at the Power Show, the combination of lectures and exhibits will furnish a valuable opportunity for securing available information on the important types of mechanical equipment. The Power Show has great educational value and the plan of lectures, with the opportunities to study several concrete examples of the apparatus dealt with in each lecture, provides means for making this educational value available to those who use the Power Show for that purpose.

The lectures will be further supplemented by a series of attractive motion-picture records of engineering achievement.

The managers of the Power Show are Fred W. Payne and Charles F. Roth, with offices in the Grand Central Palace, New York.

Protecting Soot Blower Elements

With large horsepower boilers of special design, such as are being built today, and in many other boilers continuously forced at high ratings, some soot-blower locations necessary require protection for the soot-blower element. The Diamond Power Specialty Corporation, of Detroit, has perfected a device, known as the Diamond Barriers, for accomplishing this purpose. These barriers are made in various designs and are constructed of special heat-resisting metals.

Diamond Barriers have been thoroughly tested under actual service conditions where soot-blower elements were exposed to high furnace temperatures. Under these actual service conditions it was found that the barriers accomplished the three following results:

1—They place a barrier in the path of the gases, thus preventing the scrubbing action wherever the inert gases which usually surround the soot-blower element are constantly swept away, to be replaced by an oxidizing atmosphere. This scrubbing action was long ago determined to be one of the factors which brought about the premature failure of the soot-blower element.

2—It was found that these barriers maintained a somewhat lower temperature of the soot-blower element than would be possible if the soot-blower pipe were exposed. This lower temperature was brought about by the fact that the barriers were fastened to the boiler tube and the heat surrounding the blower pipe on the outside of the barrier is absorbed and transferred through the casing to the water inside the boiler tube.

3—The barriers afford the maximum protection possible for the soot blower from the radiant heat of the furnace.

Rise of Brown & Co. Subsidiary

During recent years Brown & Co. of Berlin, N. H., have been among the most prominent paper manufacturers in the United States to utilize every by-product of paper and pulp manufacture; one would hardly be surprised if the enterprising New Hampshire manufacturers suddenly commenced the manufacture of Rayon, whose principal ingredient is bleached sulphite pulp and which the Berlin mills produce in greater volume than any other single mill in the world.

The recent and most spectacular instance is the increase in their production of fibre conduit made from pulp for electrical transmission wires and used very largely by the big electrical manufacturing companies. The International Western Electric Co. in Spain has ordered several million feet of the material and the export business generally is growing faster than the domestic, although that is huge. It is said that Brown & Co.'s production of Mermico fibre conduit will approximate 36,000,000 feet during 1925. The plant's daily output is valued at $14,000. To Howard Parker of Portland, Me., in the employ of Brown & Co., goes the credit for the invention and development of the fibre conduit pipe, the machinery for utilizing moulded pulp and several other important patents.

Forest Products Laboratory Issues Program

The Forest Products Laboratory at Madison, Wis., has issued the "Program of Work" for 1925-1926.

A description of each active project is given, a summary of the results obtained and a plan of work for the present year.

The Section of Pulp and Paper contains the following list of nine subjects: Suitability of American Woods for Pulp; Physical Properties of Pulps; Alkaline and Neutral Pulping Processes; The Acid Sulphite Pulping Process; Bleaching of Pulps; Flax Straw as a Source of Paper Pulp; Pulp and Pulpwood Decay; Pulp and Paper Mill Waste.

Under each title is given the purpose for which the research is being made, and the status of the work accomplished. A list of publications already issued is also given under each subject heading.

In other sections, there are also interesting projects. In the Section of Pathology there is a project on pulp and pulpwood decay and in other projects decay is studied along with other forms of waste.

Equipment at Port Alfred for the new development there will include Claflin continuous beaters as manufactured by the Herman Manufacturing Co., of Lancaster, Ohio. These machines will be manufactured for the Port Alfred company by the Waterous Co., of Brantford, Ontario, which company has been licensed by the Herman Manufacturing Co. to manufacture and sell Claflin beaters in Canada.

Other installations of Claflin continuous beaters, which are at present under way, include two for the Fraser Co.'s mill at Madawaska, Me., and one additional machine at the Scott Paper Co., Chester, Pa.

Rayon, Third Largest Textile Industry

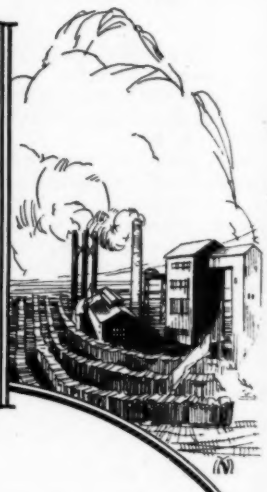
Annual output of cotton after a century of intensive production is 11,000,000,000 pounds.

Production of wool, use of which dates from prehistoric times, is 2,865,000,000 pounds.

Production of silk was about 75,000,000 pounds.

Production of rayon nearly 100,000,000 pounds. This justifies the statement that rayon is third largest textile industry after cotton and wool.

Yours for the Asking



WHEN you employ expert technicians, you generally expect to pay them big fees. Men who have devoted years of their lives to the intensive study of some special subject, do not usually talk in pennies when they set a price on their knowledge. Yet you have undoubtedly found that it pays in the end to get expert advice on your plant problems.

No problem of the modern plant is more important than that of lubrication. Rapid deterioration, heavy repair bills, delays and loss of good will are the costs of faulty lubrication.

The Standard Oil Company (Indiana) offers you the services of its lubrication engineers—and offers them absolutely free. The members of our technical staff have spent years in gathering their knowledge of lubricants. Their experiments and research work have helped, in a large way, to make possible the development and operation of the complex machinery of today.

These highly trained experts will gladly make a survey of your plant, investigate your problems, and recommend the lubricants which will give best results on each piece of machinery. And this service will cost you nothing.

Standard Oils and Greases

will, when used correctly, protect your machinery from the wear and tear of friction, save repair bills and lower your operating costs.

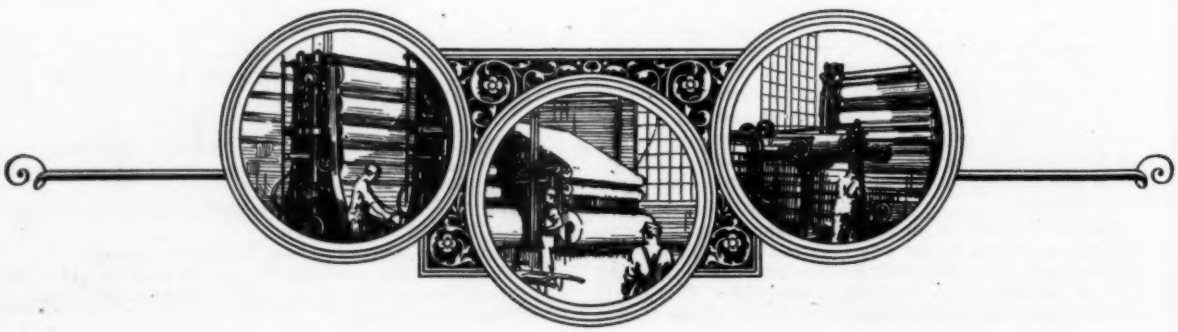
In our line of Oils and Greases we have the grades that are exactly suited to each piece of machinery in your plant. Let our lubricating engineers study your requirements and make their recommendations.

Write or phone our nearest branch office

STANDARD OIL COMPANY

(Indiana)

General Offices: 910 S. Michigan Avenue Chicago, Illinois



New England News

October 1, 1925.

Board Mills Make Good Showing

Unquestionably a feature of the current situation is the excellent showing made by the board mills of New England as a whole. This group reports close to 100 percent production although admitting that orders are largely of the rush variety. Entering on a season of normal box factory activity, however, should enable the board mills to maintain operations for some time yet. We find that the mills are unanimous on the $47.50 level for chip while there is no shading of $50 on news, proving that there are no mills at this writing forced to cut prices to keep machines operating. Summer quiet has been taken advantage of by several board mills to renovate, repair and improve. The New Haven Pulp & Board Co., at New Haven, Conn., has installed new dryers on its No. 1 machine, made improvements to the wet end and is operating at capacity with both machines, the No. 2 as formerly confined to folding boards.

The Haverhill division of the Gair company, has made several minor improvements and established new storage for waste paper following a fire which destroyed a freight shed of the B. & M. which the paper mill had leased and filled with waste.

The Davis Paper Co. as we write is said to be coming back into operation at full time. Closed for a fortnight due to a local fair they are again on the active list. Thames River division of Gair is said to be on full time and both machines of the Uncas Paper Board Co. (in receivership), at Norwich, Conn., are operating. A third machine at this mill is not counted in determining rate of production as it has not been deemed advisable to attempt running in recent years.

Fine Paper Survey Shows Improvement

The great Connecticut Valley district does not show up so poorly in a comparison with other divisions of New England paper industry. A recent survey taken of the so called independent group of mills in Holyoke and South Hadley, show operations averaging 80 percent of capacity with six mills 100 percent full time.

This of course does not include the mills of the American Writing Paper Co. regarding whose operations no figures are available. In the survey made by a private agency in Holyoke, the officials of the Independent mills were reluctant to make any predictions that could be construed as unduly optimistic.

Ohio mills of the American Writing Paper Co., known as the Franklin and Excello mills will be sold at public auction in a short time, the four weeks' public advertising as required by the Federal Court at Boston in its instructions to Receiver Willson, being nearly over. It will be recalled that the Federal Court at Boston in authorizing sale of the Ohio properties in order that the reorganization might proceed more smoothly, insisted that the upset price be $214,500, which if not bid will halt the sale until further instructions have been received from the Court. A deposit of $22,000 is required of every bidder according to the rules for the sale laid down by the Boston court. Bondholders, creditors, or others connected with the company may bid at the sale. One important point should be stressed—there will be no parcelling out of the machinery, real estate, etc.; the order reads that the property must be sold in one lot.

The Franklin mill has of late years been used exclusively to prepare rags for the Excello plant which is but a few miles distant. The latter had manufactured bonds and ledgers but has had an uneven record of operations and according to Receiver Willson has shown a loss during the past three years. The relatively low upset price—the plant was appraised at nearly $500,000 by the American Appraisal Co.—is due to a recognition of Mr. Willson that additional machinery and improvements must be paid for by any purchaser.

The well-known Malcom Chace interests in the International Paper Co., are said to be prominent in the merger of the power reserves of the New England Power Co., and the Power Corporation of New York. Mr. Malcom Chace is a Boston financier and is said to be heavily represented in the common stock of the International Paper Co. It will be recalled that International Paper Co. has important water power reserves throughout northern New England, which have never been exploited either for paper making or general power purposes. It is probable that these will be linked into the general power development of the merged companies' reserves.

The Rate Hearing

Although it concerned all class rates, the Boston hearing of the Eastern class rate investigation was largely pre-empted by the paper interests of New England and New York State whose interests, however, were divergent. Sheldon Wardwell of the St. Croix Paper Co.; C. L. Whittemore of the New England Paper & Pulp Traffic Association; P. J. Dowd of the Holyoke Traffic Bureau; C. C. Furgason, traffic manager of the West Virginia Pulp & Paper Co., and Wilbur LaRoe, attorney for the International Paper Co., were among those conspicuous in the hearing which was held at the Chamber of Commerce Library in Boston before Commissioner Eastman and Examiner Hosmer.

Strongly opposing the system of mileage blocks proposed by the Maine Central R. R. on shipments to trunk line and C. F. A. markets, New England paper mills contended for the maintenance of the present level of rates, while the representatives of the northern New York mills as well as the West Virginia Pulp & Paper Co. insisted on the application of mileage rates to the class rate system as the only equitable solution.

Collins Sues Steel Co.

Suit has been entered in the Federal District Court at Boston by the Collins Manufacturing Co., of North Wilbraham, Mass., vs. the Wickwire Spencer Steel Corporation, a Delaware company with important wire mills at Spencer, Mass. The Collins Manufacturing Co., a well known fine paper mill, complains that the defendant has enlarged its mill and has vastly increased the amount of contaminating matter discharged into the Quaboag River which empties into the Chicopee River on which the paper mill is situated. This pollution included ferrous and ferric matter, sewerage, and other noxious wastes. Samuel R. Whiting, president of the paper company, in appearing for his concern declares that the steel mill had been requested to desist from this damaging action, had promised to stop and had failed to do so. Therefore, an injunction is asked restraining the company from further polluting the waters of the river, an attachment against the steel company for $200,000 to compensate it for damages and a reasonable assessment of such damages.

Fully 12 paper manufacturers will actively participate in the Direct Mail Convention at Boston during the last three days of October. Strathmore Paper Co., S. D. Warren Co., A. M. Collins Mfg. Co., Dill & Collins Worthy Paper Co., Hammermill Paper Co., Tileston & Hollingsworth Co., Falulah Paper Co., Paper Makers' Advertising Club of Holyoke, are conspicuous in the exposition. Watson M. Gordon, advertising manager of the S. D. Warren Co., is active on several committees, A. V. Howland, of Tileston & Hollingsworth, is head of the Exposition Management Committee, Cy Norton, of Strathmore Paper Co., is serving on committees, and several others have been drafted to do important work in this connection.

One of the two principal objections made by New England Paper Interests to the proposals of the railroads in the class rate revision is the thirty constructive miles added to the actual mileage by the New York, New Haven and Hartford Railroad, at Harlem River, N. Y., for alleged lighterage service whereas the actual service performed is floating of cars to Manhattan or Jersey City piers. Rates charged trunk line shippers would be increased above the actual mileage rate, but 10 miles for the floating service from the Jersey shore to Manhattan. This discrimination against the New England shipper was contrasted with the low competitive rates granted trunk line mills to important paper markets on the Long

THE INDUSTRIAL TYPE DC HAS SET NEW STANDARDS
Sturdy—Efficient—Economical
PATENTED STEERING arrangement gives perfect control entirely from operator's position in the crane.
OTHER FEATURES include: Unusually large rollers in the crawling treads. Two speeds for traveling and hoisting. All motions controlled by individual friction clutches. Steel castings. Bronze Bushings. Cut gears.
CRANE, SHOVEL, DRAGLINE, PILE DRIVER, CLAMSHELL, GRAPPLE, MAGNET, ALL IN ONE
Maximum Efficiency in Each Service
DIESEL POWERED STEAM, GASOLINE, ELECTRIC, OR
INDUSTRIAL
Write for book 120
INDUSTRIAL
CRAWLING TRACTOR CRANES
INDUSTRIAL WORKS · · · BAY CITY · MICHIGAN

Island Railroad, where the New England haul was all rail, while the service performed for the trunk lines consisted of a rail and floating car service across New York harbor.

"Penny Savers," a new development of the envelope this year, put on the market through its distributors, by the S. D. Warren Co., of Boston, has had considerable success, owing to the postage saved by its use in Direct Mail work. The Penny Saver Envelope is offered in various sizes with inserts to match and is the product of the United States Envelope Co.'s Kellogg division with the use of specially sized Warren paper. One side is left ungummed, permitting inspection of the contents by the Post Office Department, and the securing of a lower rate without the cheapened appearance which an unsealed envelope manifests.

Grandee, a new Strathmore Paper Co. line, has been introduced on the market this month. It is intended to imitate famous Spanish hand made papers. It will be available in six colors and white and two weights. It is a laid paper, intended for distinguished catalog and announcement effects.

Hollingsworth Bond, a new line of sulphite paper for general use has just been introduced on the market by Hollingsworth & Whitney Co., the well known Maine paper manufacturers. It is to be offered in eight colors and white and is surface marked.

G. Stanley Morse, Vice President and General Manager of the Valley Paper Co., in Holyoke, announces some important improvements to their Fourdrinier and other machinery, the work having been accomplished during the summer months.

The Charles River Paper Co., organized by J. E. Perry and the National Fireworks Co., of Boston, have at last put their Waltham mill into operation. It is producing 10 tons of light weight board daily, about half of which is being used by the fireworks manufacturers. The cylinder machine in this old stone mill, was taken down and a new base constructed, while important additions were made to the electrical power equipment.

Crocker-McElwain's Merchant Conference

The third annual mill and merchant conference of the Crocker-McElwain and Chemical Paper Mfg. Cos., of Holyoke, at the Hotel Monotuck was an exceedingly successful affair. New England was particularly well represented at the meeting. The program was brisk, interesting and coherent with plenty of fun for both men and women. The meeting opened with the address of welcome by Clifton Crocker, president of the associate mills, then an address on Modern Sales Practice Applied to the Paper Business, by Harry J. Winsten, of New York; the 1926 Advertising and Sales Promotion, by C. H. Barr, manager of sales promotion; and discussions of merchandising problems by C. T. Waite and Claude Hartwell. The ladies were taken on an all-day outing at Spofford Lake, while the men had luncheon in the small banquet hall of the Monatuck. In the afternoon of the first day, Bantam Manifold and Index Bristol was given the attention that they richly deserve in talks by C. K. Urquart and Michael Pomerance. The conference on Certificate Bond at 3 in the afternoon was rightly looked on as perhaps the most important period of the entire conference; K. S. Warner, chairman of the advisory committee, made his report at this meeting. The banquet was served in the main hall of the Hotel Nonatuck that evening.

The second day's morning program was chiefly devoted to Interwoven covers with discussion by Walter Perry and an address by Frank A. Juckett, of the Old Colony Envelope Co. The business sessions adjourned at noon. The ladies of the party were taken to the top of Mt. Tom for the unsurpassed view of the Connecticut Valley, while golf at the Longmeadown Country Club and other sports took up the afternoon.

Strathmore Paper Co. has prepared a chart of its papers, dividing them into four classes—for Every-day Printing, for Prestige Printing, for Distinguished Printing, for Decorative Printing. The aim is to assist in the choice of papers by determining quickly the character of the job for which the stock is to be used. Incidentally the Strathmore Paper Co. is preparing to distribute a new book on the Munsell color system and has furnished its distributors an unusual collection of greeting card specialties, called the Strathmore Ensemble, arrayed in logical order in a well-bound book.

Mr. F. B. Oldham, a well-known paper mill engineer and connected with the Watson Frye Co., of Bath, Me., paper mill machinery manufacturers, is understood to be contemplating with others the purchase of a pulp mill in Maine for the manufacture of binders' board. Distributing arrangements are first being arranged.

Annual corn roast of Hollingsworth & Vose Co. office force was held at Mr. Louis Vose's home in East Walpole, Mass., early in September. Incidentally, Hollingsworth & Vose Co. are understood to have ordered a new paper machine.

Winthrop Murray Crane

Little was said last Saturday at the memorial tribute to the late Winthrop Murray Crane of his fame as a paper maker, yet this side of his life was most important and it was during his career that the company was developed into the greatest money paper manufacturing unit in the world. Moreover, it was Winthrop Murray Crane who personally went to Washington in the early years of his life, before he had achieved much prominence in politics, and secured the Government contract for printing its money paper which Crane & Co. has retained ever since.

Friends of the late W. Murray Crane, among them Chief Justice William Howard Taft and Senator William M. Butler, gathered Saturday at Dalton, Mass., to dedicate a memorial to the late Senator. A letter from President Coolidge was read at the exercises.

Justice Taft's tribute to his warm personal friend was one of the finest bits of eulogy that has been spoken in recent years, we believe. A memorial table, suitably enclosed and situated in the Community Park given to Dalton by the terms of Senator Crane's will, was the scene of the memorial exercises. Many noted guests were present as well as many prominent paper manufacturers from up and down the length of the Connecticut valley.

Willard E. Everett

After 72 years of active life, the greater part of which was in active and useful service to the paper industry, Willard E. Everett passed away at his home in Norwood recently. Mr. Everett was born in Dedham, Mass. Part of his early education was in Germany, where at Stuttgart he became interested in paper manufacture and decided on it as his life work, though his father has a flourishing furniture business in Dedham. On returning to America, he secured employment with the Montague Paper Co., at Turners Falls, where he devoted five years to an intensive study of paper and its manufacture. The skill and enthusiasm of the young man resulted in his being given the contract to build the mill for the Turners Falls Paper Co. This he successfully carried out and he remained as treasurer of that company for twenty years, until in fact, the International Paper Co. was formed, and he was offered the managership of their Franklin, N. H., plant. He remained for ten more years at Franklin, where he secured the building of a Carnegie Library, and filled important town positions, a public spirit, which he had also shown despite his busy life in the paper industry at Turners Falls.

Mr. Everett is survived by his wife and two daughters.

George H. Bauer, assistant manager of sales, Foster Engineering Co., Newark, N. J., who has been connected with the company for several years, has been appointed manager of their Chicago branch office.

The Morse Chain Co., Ithaca, N. Y., will exhibit at the Power Show numerous applications of Morse Silent Chain Drives, featuring the rocker joint which this company introduced.

SYMBOL of QUALITY
KALBFLEISCH CHEMICALS
FOR NEARLY A CENTURY

Chemicals *for* Paper Mills

Rosin Size:

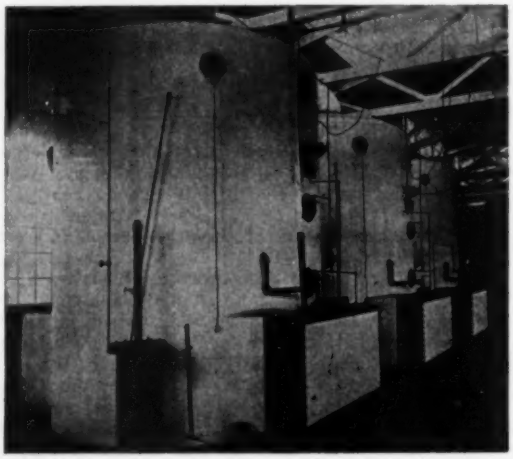
IN DRUMS, BARRELS AND TANK CARS
—ALL GRADES OF BEST QUALITY—
SIZE POSSESSING SPECIAL PROPERTIES

for FINE WHITE PAPERS *and* PAPERBOARD

Personal Technical Service, Introducing the Most Efficient Emulsifying Systems for Greatest Economy

THE KALBFLEISCH CORPORATION
200 FIFTH AVENUE, NEW YORK

Factories: ERIE, PENNSYLVANIA
BROOKLYN, NEW YORK
KALAMAZOO, MICHIGAN
ELIZABETH, NEW JERSEY
CHATTANOOGA, TENNESSEE
WATERBURY, CONNECTICUT



Triple effect illustrated above was installed fourteen years ago and is still going strong. As a result of its excellent work concentrating soda black liquor we have sold to the same concern sixteen large multiple effect evaporators.

FIFTY-EIGHT per cent of orders for Zaremba Evaporators are repeats. This is not due to superhuman salesmanship, but to the fact that they are designed to exactly suit conditions and are carefully constructed.

As a result Zaremba Evaporators have acquired an enviable and deserved reputation for efficiency, durability and reliability.

Evaporators
for **Soda Black Liquor**
Sulphate Black Liquor
Sulphite Waste Liquor

ZAREMBA COMPANY

506 Crosby Building BUFFALO, N. Y.

Michigan News

October 1, 1925.

Galesburg Box Co. Now in Operation

The Galesburg Paper Box Company, located at Galesburg, Mich., is now in production and doing a large and steadily increasing business in the manufacture of folding boxes for all types of baked goods and similar sizes. It is planned later to take on the manufacture of clothes boxes. The company is capitalized at $25,000.

G. H. Pountain Heads Michigan Superintendents

George H. Pountain, secretary-treasurer of the Michigan division of the American Pulp and Papermakers' Association for years and recently 2nd vice-president, was elected president at their last regular meeting in Kalamazoo, Thursday evening, September 24. M. J. Redmond was re-elected 1st vice-president; Clarence Thorne, Watervliet Paper Company, 2nd vice-president; Clarence Harter, Rex Paper Company, 3rd vice-president; Alfred Bryant, Bryant Paper Co., secretary-treasurer.

Frank Eilers, Eilers Paper Mill Supply Company, who recently returned from a trip to Japan, gave a very interesting descriptive talk on that country, and the superintendents were much impressed with it.

The Michigan division has been under the able leadership of E. H. Gilman for the last two years. During this time Mr. Gilman has succeeded in not only keeping the interest of the superintendents in the organization, but also getting the salesmen of paper-mill lines interested. By getting the salesmen interested they realized the value of the association, and a great share of the advertising matter in the annual publication of the Superintendents' Association comes from the Kalamazoo valley.

Those present were: E. H. Gilman, Bryant Paper Co.; Frank Eilers, Eilers Paper Mill Supply Co.; Jacob Parent, Western Board & Paper Co.; Alex MacVie and M. J. Redmond, Kalamazoo Paper Co.; Alfred Bryant, Bryant Paper Co.; Wm. Sievert, Michigan Carton Co.; George Pountain, Allied Mills; Jacob Kuss, Watervliet Paper Co.; Clarence Thorne, Watervliet Paper Co.; Dave Eggleston, Sutherland Paper Co.; Joe Loughead, Paper Mill Supply Co.; Vic Troyer, Constantine Board & Paper Co.; Harry Bradford, Rex Paper Co.

Wolverine Paper Company Sold

The defunct Wolverine Paper Co., of Otsego, has been sold for $60,000, according to Robert L. Campbell, attorney for Charles E. Nelson, trustee in bankruptcy, the sale having been approved by the referee.

The assets listed and appraised value are: Real estate, $47,500; machinery and fixtures, $87,500; inventory, $29,958; total, $164,958. Mr. Campbell stated that on his advice the bills and accounts receivable, amounting to $59,000, will be handled by the trustees.

The mill is still being operated under the management of C. E. Nelson, president of the MacSimBar Paper Company. Just how long it will continue to run is unknown. It has been estimated by certain persons closely connected with the situation that it will require at least $200,000 expenditure to put the plant in condition to show a profit.

Dr. J. W. Zanders and E. Kling, officials of the J. W. Zanders Paper Mill, Bergisch-Gladback, Germany, were visitors in Kalamazoo. They visited all the mills in this vicinity, and were surprised at the immense production of paper in this location.

Kalamazoo Loose Leaf Binder Salesmen Meet

As a reward for their efficiency in maintaining sales at 100 per cent during the summer, 23 salesmen of the Kalamazoo Loose Leaf Ledger Company were entertained in Kalamazoo by this concern, September 30 to October 3.

A business session was held on Wednesday, the 30th, and in the evening they attended the theater as guests of the company.

Thursday was spent at golf and fishing. Friday a motor tour was made of southwestern Michigan, concluding with a dinner at Peninsular Club in Grand Rapids, where special vaudeville performances were given. Saturday was spent in inspecting the looseleaf binder plant, and in the evening the visitors held a banquet at the Park-American Hotel, followed by a vaudeville entertainment.

Local plant executives joined in the merry making, bringing the party to about 35. It was announced that the total volume of business for the company is well ahead of last year.

Bryant Paper Obtains New Charter

The thirty-year charter of the Bryant Paper Company, issued Sept. 24, 1895, has terminated. Articles of reincorporation were filed by Secretary C. A. Fox, and a reincorporation charter has been granted them.

The authorized capitalization is $6,300,000, of which $6,000,000 is common and $300,000 is 6 per cent preferred. Of the authorized capital, all the preferred and $5,000,000 of the common has been paid for and is now outstanding. The balance of the common is held in the treasury for future needs. Reincorporation was authorized at a meeting of the stockholders, held July 28.

When the Bryant Paper Company was granted its first charter, the capital was placed at $125,000 common stock. Initial holders of the original stock, through the medium of stock dividends and the rights offered for the purchase of additional stock, have been able to increase their holdings forty times. For over 25 years this concern has paid a minimum cash dividend of 12 per cent.

Hawthorne Suffers Crash

Property damage between $5,000 and $10,000 was caused when a driver and shaft to one of the smaller engines at the Hawthorne Paper Company's plant gave way, hurling large and small blocks of metal hither and thither in the engine room.

Fortunately, no one was in the room at the time of the accident. Some of the broken parts were hurled through the windows, against the walls and up to the ceiling.

Though work in certain parts of the mill will be suspended till new parts arrive, the Hawthorne company plans on being able to produce up to capacity by the middle of October.

W. A. Munro with Munising Paper Co.

W. A. Munro, formerly groundwood superintendent of the Washington Pulp & Paper Corporation, Port Angeles, Wash., is now situated at Munising, Mich., as general manager of the Munising Paper Co.

The Munising Paper Co. has engaged to take charge of the research work Mr. R. J. Schadt, formerly in charge of this work in the Port Angeles company.

Eddy Stock Decision Reversed

A decision of the greatest interest to the hundreds of holders of preferred and common stock in the Eddy Paper Company of Michigan has just been handed down by the supreme court of this state. By unanimous verdict the case of John C. Maxwell and others vs. the Eddy Paper Company of Michigan is completely reversed and the plaintiffs are granted the relief asked.

The case was started in April, 1923, being the outcome of the sale of the Eddy Paper Company of Michigan to the Eddy Paper Corporation of Illinois, and the adoption of a resolution authorizing the transfer of all stockholdings in the original company to the Illinois corporation. This resolution provided that in the transfer and issuance of new shares that each share of preferred stock should rank on a basis of three to one for each share of common stock in the proposed distribution of Eddy Corporation stock.

"It is a complete reversal," said Harry Howard, attorney for the Eddy Paper Company of Michigan, defeated party in the suit. "While I have not seen the written opinion, I am informed that the supreme court decision sustains the protest of the plaintiffs and declares that all those who did not vote on the resolution shall be compensated according to their

C. S. B.

Simply and easily installed — no special labor required. Put in your own system to suit yourself with C. S. B. Approved Sprinkler Heads. Send us specifications, we will help you.

Safety

Prevent accidents and loss of life with efficient fire protection.

By keeping down the fire hazard, you protect the life and employment of your employees as well as your property. With the effective C. S. B. System, ample protection is assured.

Approved by—

The Associated Factory Mutual Fire Insurance Companies and the Underwriters Laboratories Chicago

C. S. B. SPRINKLER CO.

Main Office
54 BATTERYMARCH ST.
BOSTON, MASS.

Works
LACONIA, N. H.

Fitchburg Duck Mills

ESTABLISHED 1844
54 Duck Mill Road
FITCHBURG, MASS.

MANUFACTURERS OF

STANDARD AND MULTIPLE PLY

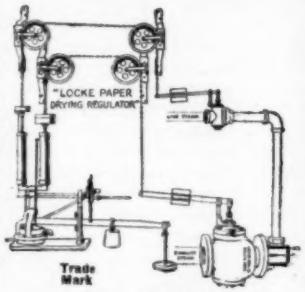
DRYER FELTS

English Weave in Two, Three, Four, Five and Six Ply—60 Inches to 220 Inches in Width

Fine Faced Felts for Fine Papers. Absolutely no felt marks in paper. TRIUNE Three Ply Felts for Coarse Papers.

LOCKE Paper Drying Regulator

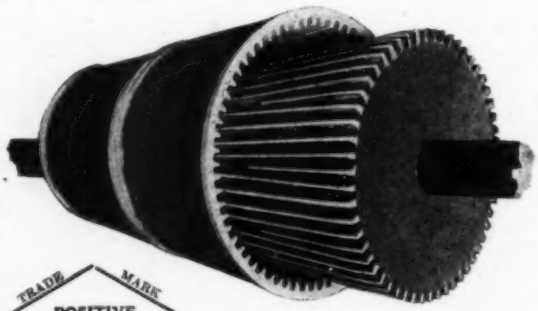
This regulator controls both live and exhaust steam for any purpose where steam is used, or it will control the direct steam when used alone. Is unlike, both in construction and operation, any device that has heretofore been designed for this purpose. Controls not only temperature of the dryers when paper is running over them, but maintains the same temperature whenever there is a break in the paper. This machine is most sensitive to any change in temperature of dryers, yet it has been found to be perfectly reliable and what is more, is not continually getting out of order.



Trade Mark

Reg. U. S. Pat. Off.

Locke Regulator Co., 700 North St., Salem, Mass.
"Locke" Regulator Agency, 39 Cortlandt Street, N. Y. C.
No other agency in N. Y. C.



Are you interested in a Jordan Filling that has stood all competitive tests since the year 1910?

IF SO

Forward your inquiry to

THE BAHR BROS. MFG. CO.
Marion, Indiana, U. S. A.

A JORDAN ENGINE FOR EVERY PURPOSE

Experimental Baby Jordans

Either belt or motor gear drive, for Laboratory or Experimental Paper Mill purposes.

Write for details.

THE NOBLE & WOOD MACHINE CO.
Hoosick Falls
New York

claims. Those who did vote for the resolution are stopped from any further action in the case. As near as I know the opinion does not indicate exactly those who voted for the resolution and who did not."

R. H. Cavanaugh, who has been engaged in legal work in his father's office during the summer months, indicated Saturday that the victory would result in preferred stockholders receiving an average of 35 cents on the dollar of their original holdings in the Michigan company.

Tappi Fall Meeting Program

The 1926 fall meeting of the Technical Association of the Pulp and Paper Industry will be held in Kalamazoo, October 14 and 15. It will bring to this city about 125 to 150 delegates, all of them men widely known in the paper industry and closely identified with its activities. Already a large number of reservations have been made.

Registrations will be the first order of business for Wednesday morning, the 14th, and the first session will be called to order by President George K. Spence, New York & Pennsylvania Company, Johnsonburg, Pa.

The morning session will be devoted to paper testing in all its phases, and discussion will be under the direction of B. W. Scribner, chairman of the Paper Testing Committee and chief of the Paper Section of the National Bureau of Standards at Washington.

A buffet luncheon will be held at the Park-American at noon, followed by a session devoted to discussion of white water waste in paper mills, dealing also with prevention of stream pollution. This discussion will be headed by George D. Bearce, of the News Print Service Bureau, New York City, and Vance V. Edwards, of the Forest Products Laboratory, Madison, Wis.

The fall banquet will be held Wednesday evening at 7 o'clock. There will be several speakers, including a short talk by William G. MacNaughton, secretary-treasurer of the Technical Association. He will tell of his visit to the Scandinavian pulp and paper mill.

Thursday morning a general discussion of drying paper will be taken up. This will be led by W. Noyes Baker, of the International Paper Company, New York City, and R. W. Leeper, of Howard S. Taylor, consulting engineers, Dayton, Ohio. This will be followed by luncheon and a visit to the local mills Thursday afternoon.

The headquarters of the convention will be at the Park-American Hotel. Through an invitation from Jacob Kindleberger, president of the Kalamazoo Vegetable Parchment Company, the Thursday morning session and luncheon will be held at the Parchment Community House. The local committee on arrangements includes W. J. Lawrence, vice-president of the Western Papermakers' Chemical Company; Ralph A. Hayward, general manager of the Kalamazoo Vegetable Parchment Company, and F. C. Clark, secretary of the Hawthorne Paper Company.

H. M. Dunning has gone to Philadelphia, where he will act as sales representative for the Sutherland Paper Company. He will cover eastern territory, making his headquarters in Philadelphia.

Mr. Jacob Kuss, long and favorably known in the manufacture of coating paper in this section, has joined the Watervliet Paper Co. as foreman in their coating department.

Woodbury Ransom Leaves $1,000,000

The will of the late Woodbury Ransom has been admitted to probate, with Charles S. Campbell, treasurer of the Kalamazoo Vegetable Parchment Company, named as executor. Mr. Ransom left $175,000 in real estate and $825,000 in personal property.

H. M. Gimlin Joins Hawthorne Forces

Horace M. Gimlin, late of Chicago, has become associated with the Hawthorne Paper Company, of Kalamazoo. Mr. Gimlin is an old-time paper man, having been for 18 years with the Bradner-Smith Paper Co., Chicago, and later with Dwight Brothers, also of that city. He started as a printer in Kansas, working at the side of William Allen White.

Wisconsin News

October 1, 1925.

Northwest Superintendents Have Successful Meeting

"One of the most profitable conventions in the history of the organization," was the vote of the Northwestern division of the American Pulp & Paper Mill Superintendents' Association at the conclusion of a two-day session in Madison and Beloit, Wis., on Sept. 18 and 19. About forty superintendents were in attendance.

Business meetings were held in Hotel Loraine. Trips of inspection were made to the Forest Products Laboratory, Madison, the Beloit Iron Works, The Beloit Box Board Co. and Dowd Knife Works. An interesting lecture was given by R. N. Miller, of the Laboratory, on "Effects of Cooking Upon Yields and Quality of Sulphite Pulp," which provoked a very lively discussion.

Guides conducting the superintendents through the Laboratory described the woods used by papermakers and the means of preventing deterioration after being delivered to the mills. They were also shown experiments being made in producing pulps from various kinds of wood by the sulphate, sulphite and mechanical-chemical processes. They also observed the experimental paper machine and heard the means of testing paper explained and listened to much other useful information. A number of questions were asked during the visit.

At Beloit the superintendents had an opportunity to see the huge paper machine being built by the Beloit Iron Works for the Curtis people, publishers of the Saturday Evening Post and the Ladies Home Journal, noted for the excellency of their paper and typography.

Cost Accountants Visit Laboratory

About thirty accountants belonging to the Wisconsin section of the Cost Association of the American Pulp and Paper Industry attended the division's convention which took place Sept. 25 at Hotel Loraine, in Madison, Wis.

The members were conducted on a personal tour of inspection through the Forest Products Laboratory of the University of Wisconsin, just as the paper mill superintendents in convention here a week earlier had been taken through the Laboratory. The accountants were taken through in groups headed by guides. In the various departments officials explained the details of the work being carried on by the University in connection with pulp and paper making.

Business meetings were held in the hotel, and in one of the meetings a very interesting paper on the subject, "Collecting Data for Cost Calculations," was read by Mr. R. N. Miller, of the Forest Products Laboratory.

Big Fire in Northern's Wood Yard

The entire Green Bay fire department equipment was utilized in fighting a bad fire which broke out in the pulp wood yards of the Northern Paper Mills of that city on Sept. 10.

The blaze spread so rapidly and resisted the work of the firemen so stubbornly that for a time $75,00 worth of pulpwood was threatened. The men worked all night to extinguish it, and derricks were used to open holes for the firemen. The total damage was about $15,000.

A group of nine men coming from various states and interested in pulp and paper manufacture recently paid a visit to the Bergstrom Paper Co., Neenah, and later were entertained by the company at a luncheon. They were: F. Pagenstecher, C. A. Fox and G. H. Geipheide, Kalamazoo, Mich.; H. O. Parker, Niles, Mich.; W. W. Sunderland, West Carrollton, Ohio; S. L. Wilson, Holyoke, Mass.; William Kettra, Chillicothe, Ohio; G. W. Gilkey, Plainwell, Mich., and W. D. Randall, Cincinnaati, Ohio.

Two accidents recently occurred at the Niagara and Kimberly mills of the Kimberly-Clark Co., and with these accidents there came a stop to two long safety records.

When a workman in the Kimberly mill fell under a truck and broke his ankle, that mill had operated a total of 147 con-

LINDSAY FOURDRINIER WIRES

Give Service That Satisfies

Fourdrinier and Cylinder Wires

Made in Brass and Phosphor Bronze in All Sizes

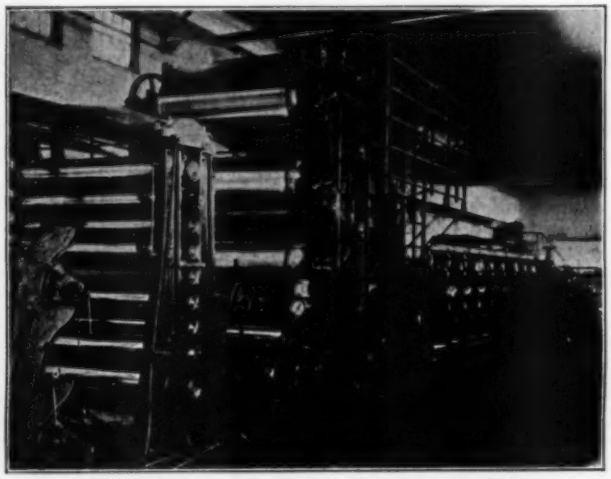
THE LINDSAY WIRE WEAVING CO.

Collinwood Station Cleveland, Ohio

The Black-Clawson Co.

HAMILTON, OHIO

Leading Builders of the best **Fourdrinier** and **Cylinder** Paper Making Machines and other accessory equipments for Paper and Pulp Mills.



A Great Success

Our patent vertical dryers installed on a Fourdrinier machine making cover papers.

No felts used on them.

Steam pressure reduced from 15 pounds to less than 5 pounds.

No cockling of the paper.

Sheet threaded by Sheehan patent carrier system.

Increased production and better paper.

secutive days without a lost-time accident. Its total of 131,567 safety "man-days" is regarded by the mill as the world's record for paper mills.

Two men were burned by sulphur at Niagara and thus came to an end a chain of 172 consecutive days without accidents, making a total of 111,584 man-days of safety.

Mills Celebrate Labor Day

Labor Day was celebrated in the Fox River Valley with the Combined Locks Paper Company and the Kimberly-Clark Company leading the way.

The latter company staged an inter-mill picnic for its mills at Kimberly, Neenah, Appleton and Niagara. The celebration took place in the village park of Kimberly. Thousands attended the event. The Kimberly band helped to drum the crowds together by parading through and serenading the various cities and villages in this community.

A monster parade, about two miles long, and consisting of employees of the Combined Locks Paper Co., proceeded through Appleton, Kaukauna, Little Chute and Kimberly to start the day's celebration in Combined Locks. Baseball games, dancing, concerts, contests and the various picnic "stunts" were provided at both celebrations.

Tissue Mill in New Quarters

The Badger Tissue Mills, of Kaukauna, are now located in their new home. The company now occupies the former plant of the Kaukauna Paper Co. The equipment was bought at a receiver's sale by Louis F. Nelson, acting for the Badger Tissue Mills. The building itself belongs to the Green Bay & Mississippi Canal Co., Appleton.

The tissue mill is operated by a corporation composed entirely of Kaukauna stockholders with the exception of one man who moved away. The company was formed about ten years ago. It has had a modest but steady growth. It now turns out about 250 cases of product a day and employs about 35 persons. By moving to the new headquarters, the mill doubles its floor space and makes possible greater production.

Early Decision Expected in Public Utility Dispute

Decisions have been handed down in the county courts of Brown and Oconto Counties permitting the Wisconsin Gas and Electric Co., a subsidiary of the North American Co., to extend a high tension power line through those counties to the northern part of the state. For a great distance, the company will use one side of the towers of the line to be erected by the Northern Paper Mills, of Green Bay, from White Rapids to Green Bay.

Arguments have also been closed in the court in Marinette County for extension of the line through that territory, and a decision is expected soon. The project was fought by the Wisconsin Public Service Corporation of Green Bay which claimed that it was an invasion of its territory. This the court denied, calling attention to the fact that the company will not serve the Green Bay Territory but only extend through there. The Green Bay company also charged that the W. G. & E. had brought condemnation proceedings not for the purpose of closing gaps in its own right of way but to close gaps for the Northern Paper Mills, a private corporation. The court declared that if the company conveys any title or easement or to the paper mill, the mill will take nothing and the power company loses what it acquires.

Judson G. Rosebush, general manager of the paper mill, was gratified at the decision, and said, "Although we are only interested spectators, the decision will bring a step nearer our plans for a big power plant. It will be the biggest in the Fox River valley and will provide us with a surplus over our present needs. Paper mills need cheap power and lots of it."

Answers Cry About Stream Pollution

A paper manufacturer and an engineering firm has answered the cry of "pollution" of Wisconsin streams by paper-mill waste.

A great prevalence of dead fish in the Fox River this year has brought state conservation wardens here to investigate conditions. It was charged that water below the mills was a greater menace to fish than water above the mills.

F. J. Sensenbrenner, vice president and general manager of the Kimberly-Clark Co., and the engineering firm of Orbison & Orbison have denied this. Pointing out the fact that nearly as many dead fish were found floating in Lake Winnebago above the mills as in the river, they declare that the chief cause of pollution lies at the scource, in Lake Winnebago, that pollution is from natural causes mostly, depending on temperature, low water, amount of wind and other natural reasons, such as vegetable growth let loose from the marshes along the tributaries of this lake. The water is lower this year than it has been for many years.

October 17 will mark the dedication of the George A. Whiting athletic field and the George A. Whiting field house of Lawrence College, Appleton. Both are the gifts of Mr. Whiting, who is president of the George A. Whiting Paper Co., Menasha, and the Whiting-Plover Paper Co., Stevens Point. The athletic field is at present located on a bluff of this property, but the future field will be in a ravine of this same property, and a huge concrete stadium will be erected. Mr. Whiting is well known for his philanthropy.

Paper Mills Display at Exposition

An unusually interesting paper exhibit was to be seen in the Wisconsin Products' Exposition of the Wisconsin state fair at Milwaukee last month.

The paper industry exhibits were in the new Manufacturers' building put up by the Wisconsin Manufacturers' Association. Former expositions were not held in connection with the state fair.

A group of Wisconsin paper mills had a section of the building to themselves to illustrate the story of paper, from the raw material to the finished product. Paper mills of Appleton had another large exhibit in the Appleton section which showed the various kinds of products manufactured in this city.

Excessive State Taxation Offers Problem

That the policy of the state government's noxious legislation and excessive taxation against its industries may result in the crippling of its industries and force them out of the state was brought out in a series of articles written by a representative of the Appleton Post-Crescent and Green Bay Press Gazette staffs.

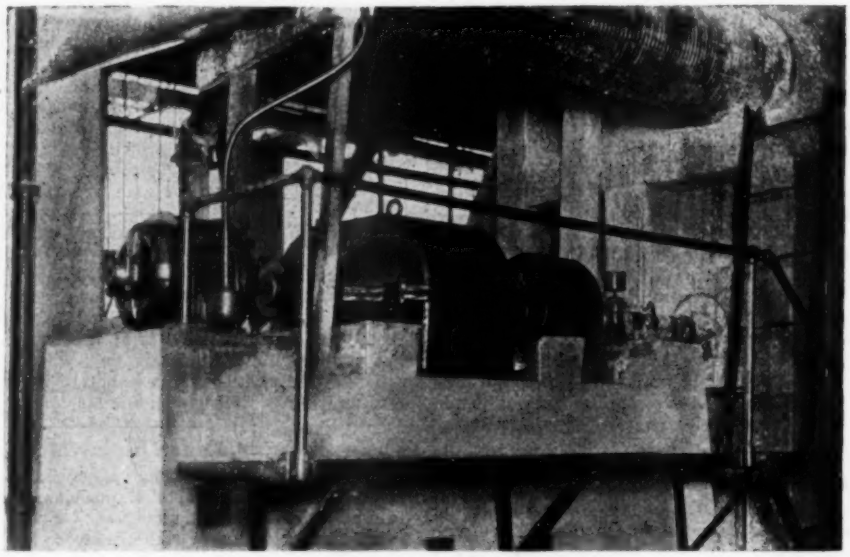
An interview with M. A. Wertheimer, New York, president of the Thilmany Pulp and Paper Company, explains why the company moved its bag plant from Kaukauna, Wis., and organized the American Lakes Paper Co., Chicago, to establish a bag plant in Waukegan.

"At Kaukauna," said Mr. Wertheimer, "we had reached a point where it was necessary to expand our bag plant. Labor, particularly the class of help that we required, was scarce. It was a question of importing additional workers or moving elsewhere. We decided on the latter step as the more advisable one. Our directors were unwilling to assume the moral responsibility of bringing labor to Kaukauna with no assurance of continued employment. Such workers might want to establish themselves in the community and it would be unfair to encourage such procedure in the face of possible developments.

"The new factory buys considerable paper for conversion from mills not only in Wisconsin but in other states. Waukegan is centrally located with respect to these purchases and for re-shipment of outgoing products and has the advantage of Chicago rate of freight."

Of the 125 workers at the Waukegan plant 25 skilled operatives formerly worked in Kaukauna. The Kaukauna plant of the Thilmany company manufactures tissues, light weight wrappings and special marked papers.

Jack Kimberly, of the Kimberly-Clark Co., Neenah, won the Valentine trophy, one of the finest cups raced for at Lake Geneva in the recent Inland Lake Yachting Association regatta. His yacht was the Shadow. Four of the crew were Kimberly-Clark men, Jack Kimberly, William Ritchie, William Kellett and John Williamson.



Palmer-Bee Reducers assure you

—a saving in power and floor space
lower erection and maintenance costs
freedom from troublesome breakdowns
absolute safety to employees
and a greater production of pulp and paper

UNDER the most severe conditions to be found in the Paper Industry—driving Jordans, agitators, conveyors, beaters and other machinery—Palmer-Bee Reducers have established an enviable record for continuous service over long periods of time, with no attention except for occasional oiling.

This exceptional performance is the result of the utmost simplicity of design, convenient accessibility of mechanism, unusual strength and skillful assembly of all component parts, and also the result of perfect lubrication of all friction surfaces.

These are the reasons why each year more and more prominent engineers in greatly diversified industries are insisting on Palmer-Bee Reducers. A copy of Bulletin 445, covering the subject of speed reduction simply and interestingly, is yours for the asking,

PALMER-BEE COMPANY
DETROIT, MICHIGAN

Palmer-Bee Speed Reducers

TRADE MILL REG. U.S. P-B MARK TYPE PAT. OFFICE

Canadian Section

Montreal, October 1st, 1925.

Australian Senate Ratifies Canadian Trade Treaty

The commercial trade agreement between Canada and Australia was ratified by the Australian Senate early last month. A short time previously the agreement was amended to provide that before imports entering Australia were entitled to the British preferential tariff they must be 75 per cent of British material and labor, instead of only 25 per cent British, as was the case under the old regulation of the Commonwealth. In this form the treaty was endorsed by the House of Representatives on motion of H. E. Pratton, minister of trade and customs.

By official proclamation the treaty came into operation on October 1st.

Increase in Newsprint Production Scheduled for 1925

The expansion in the Canadian news print industry is best gauged by listing the new machines which have started since January 1st or are to start up before the end of this year.

Anglo-Newfoundland Co.—1 227-inch, 75-ton Walmsley machine.

Newfoundland Power & Paper Co.—4 234-inch 100-ton Walmsley machines.

E. B. Eddy Co.—1 234-inch, 100-ton Walmsley machine.

Canadian International Paper Co.—2 164-inch 80-ton Dominion Engineering machines.

Wayagamack News—2 160-inch 100-ton Walmsley machines.

Beaver Wood Fibre Co.—1 164-inch 65-ton Pusey & Jones machine.

Price Brothers—2 234-inch 100-ton Walmsley machines.

This makes a total of thirteen machines with a total rated capacity of 1,200 tons of news print a day (of which five machines turning out 475 tons for Newfoundland).

Moreover, Keewatin Lumber (Backus-Brooks) is installing a 245-inch 125-ton Bagley & Sewall machine, which is expected to start up early in 1926. International Paper will be starting up two more 80-ton Dominion Engineering machines next spring, and Powell River will start up two 200-ton Walmsley machines.

Alvaro Suso, of Mexico City, has been visiting Canada with a view to securing the representation of Canadian paper mills in Mexico. He says that affairs in the Mexican republic are quite tranquil at present and conditions in every way are getting better.

QUEBEC

Meeting of Pulp and Paper School Committee

The committee appointed by H. F. E. Kent, who was president of the Canadian Pulp and Paper Association when the School of Pulp and Paper Making at Three Rivers was organized by the Provincial Government, met at the school early last month to discuss matters connected with the personnel and program of the school.

The meeting was held under the chairmanship of J. N. Stephenson, and keen interest in the welfare of the school was shown on the part of all of the paper mill representatives. Harry Bates, of Laurentide, and Maurice Neilsen, of Belgo, gave helpful information with regard to the preliminary and technical courses followed by students at Grand Mère and at Shawinigan Falls. Olivier Rolland, of the Rolland Paper Co., spoke of instances where students had gone from their mills to the Montreal Technical School, while Mr. Dean, of Canadian International Paper, and Mr. Wilen, of Wayagamack, spoke of the benefits of the school to the men in the local mills.

It was suggested that establishing some sort of scholarship assistance would enable boys from outlying mills to benefit by the advantages of the school; and Mr. G. C. Piché, representing the Department of Lands and Forest in the absence of Honorable Honoré Mercier, minister of that department, stated that his department would be greatly encouraged if two or three of the most promising young men from each of the mills in other localities could take advantage of the opportunities offered by the school.

Paul Emile Piché, who has been director of the school for the past two years, resigned a few weeks ago to accept a position with the Canadian International Paper Co. His place is being temporarily filled by V. Baillairgé, who has been transferred from the Forestry School at Quebec. Professor Fleury will remain in charge of the course in Pulp and Paper Making Chemistry, while Professor Loriot will continue the course on Pulp and Paper Making Technology.

It was recommended that a local sub-committee be appointed to co-operate with the school authorities in the matter of program and equipment, with a view to installing sufficient equipment to permit co-operation in the investigation of problems of general interest.

Prof. H. O. Keay, director of research for the Laurentide Company, Grand Mère, is visiting England and the continent, where he will doubtless find many interesting developments in the paper industry since his last visit.

The two Walmsley machines for the new Price Bros. mill at Riverbend have been completed at the Longueuil plant and have been shipped. Erection of the machines has been pushed rapidly, and is now practically completed.

Spanish River Extend Their Activities to Quebec

The Mead Investment Corporation, which are very closely related to the Spanish River Pulp and Paper Mills, have purchased the Canadian assets of the Bayless Pulp and Paper Company, of Binghamton, N. Y., subject to the investigation of a statement made by the vendors, and the purchasers have up to November 15 to complete their investigation and decide whether they are to purchase these assets or not. The assets in question consist of the St. Anne Pulp and Lumber Co. and the Beaupré Pulp and Lumber Company, and if the sale goes through it means that a new pulp mill, to cost between $3,000,000 and $5,000,000, will be constructed at Beaupré, as the latter place has been selected as the site of the new mill in the event of the deal going through.

It is reported that president Walberg of the Leaside Engineering Co., of Toronto, is trying to get the Mead people interested in purchasing his plant, which is just across the St. Anne River from the St. Anne and Beaupré Pulp and Lumber Companies. If the Mead Investment Corporation do not show themselves interested in the Leaside plant, which was used for the manufacture of munitions during the war, it is reported that the Toronto company will dismantle the plant.

Efficient and Cheap Reforestation at Laurentide

The annual meeting of the Laurentide Company, which was held on September 15th, took the form largely of a discussion of the reforestation policy of the company. The opinion expressed by President Geo. Chahoon, Jr., on this subject clearly impressed the shareholders very favorably.

One of these, referring to a statement in the report that 6,000,000 trees had been transplanted during the past year, expressed the opinion that this was an expensive and heavy work to carry through. Mr. Chahoon explained that the planting was done for the most part by machinery, and that the total cost of all these operations, including the nurseries and transplanting, did not exceed $75,000 to $80,000. He went on to declare that within the next twenty years the Laurentide policy of reforestation would amply justify itself. When

HYMAC

The Name to Remember when in need of **PULP MILL MACHINERY**

HYDRAULIC PRESSES AND ACCESSORIES FOR ALL PURPOSES
GRINDERS, WET MACHINES, FLAT SCREENS, BULL SCREENS
SAVE ALLS, WATER FILTERS, SULPHUR BURNERS
QUICK OPENING GATE VALVES, ACID RESISTING BRONZE
SPECIAL MACHINERY, ETC.

Catalogue C mailed upon request

The HYDRAULIC MACHINERY COMPANY, Ltd.

18 Tansley Street MONTREAL, QUEBEC Cable Address: Pressco

the program was completed, if there was courage to carry it out, the company would have an ample supply of pulpwood within 25 miles of the mill. Indeed, the securing of the supply would be like going out and filling the "old wood box."

Dealing with the general situation, Mr. Chahoon said: "We have gone through the year with a slight overproduction of news print that has necessitated a certain amount of curtailment in production, and our products have sold at a slightly lower price than the year before. I am glad to say, however, that economies in operation have very largely offset the reduced prices for the product, and any shrinkage in revenue has been almost entirely due to curtailment in production. We feel that there will be overproduction until consumption catches up with and meets the development plans of the industry. Therefore, as we have said in the last paragraph of the report, we deem it most advisable to be conservative in the operation of the property during the coming year."

The election of directors resulted in the old board being reappointed, with Mr. Chahoon as president once more.

St. Maurice Pulp to Benefit by Reduced Output at Hudson Falls

It is reported that Union Bag and Paper Corporation will curtail production at its Hudson Falls mill. The cylinder machine is to be dismantled and reassembled at the mill of St. Maurice Paper Co., Cap de la Madeleine, a subsidiary of Union Bag. Efficiency is given as the reason for the removal. It is stated that all the employees on the machine will be given an opportunity to work at Cap de la Madeleine.

Further Power Development on Ottawa River

Permission has been granted by the Provincial Government to A. G. Munich, of Montreal, to develop a section of the Chat Falls, located on the Ottawa river, in the township of Pontiac. This development is regarded as being preliminary to the development of 150,000 horsepower from the Chat Falls.

At the present time it is figured that in the neighborhood of 5,000 horsepower can be developed at Chat Falls, but of course with intense development and the grouping together of all the falls which form the group, the figure of 150,000 horsepower may be attained. The Provincial Government granted rights to operate the falls in 1900, when a sum of $14,000 was paid for the privilege; but certain obligations which went with the privilege were not fulfilled, and the falls were not developed, although an additional delay of five years was granted in 1907.

Two big companies are reported to be indirectly interested in the power project, they being the Ottawa Electric and the International Paper companies.

A federal charter has been granted to Hancock and Hilton, with an authorized capital of $25,000, and head office in Montreal, to carry on the business of dealers in and manufacturers of pulp, pulpwood, paper, logs, lumber, timber and other products or by-products of wood and pulp. Among the incorporators are John M. Hancock and Ernest E. Hilton, both of Montreal.

The Standard Wood Pipe Company of Canada, Limited, has been incorporated with a capital stock of $50,000 and head office in Chicoutimi, Que. The company is empowered to manufacture, buy, sell and deal in wood pipe of all kinds, and to carry on the business of dealing in lumber, timber, pulp, paper, etc. Among the incorporators are Thomas Boivin and A. F. Mercier.

Port Alfred Pulp and Paper Company, Limited, have purchased from the Taylor Stoker Co., Ltd., Montreal, three 9-retort, long Taylor underfeed stokers for installation under three 819 B. H. P. boilers at its mill at Port Alfred, Que.

Official Termination of Leaside-Bayless Litigation

The last has now been heard of the Leaside Engineering Company vs. The Bayless Pulp and Paper Company litigation, two preliminary objections filed by the Bayless people in answer to action taken while their $1,750,000 suit was on, having been dismissed in court on September 15th. Notice of discontinuance had been filed a month previously, and dismissal of the exceptions was merely a formality. The action in question was the $550,000 damage suit brought by Leaside.

Quebec Pulp Projects Paper Mill

Operating under favorable conditions, the Quebec Pulp Company, which has taken over the former Chicoutimi pulp group and its subsidiaries, is planning to erect a paper mill at Chicoutimi or at a point nearby, it is learned. Several directors have been appointed on the board recently, who, it is expected, are to help in placing the company in a good position.

In connection with the projected activity, it is stated that Mr. McNichols, of the financial house of L. G. Beaubien & Co., Montreal, is to take up his residence in Chicoutimi, and be in charge of the affairs of the company. Already a contract for the inventory of the limits of the company has been awarded to Thoas Maher, of Montreal, who has commissioned airplanes with that object in view.

Mr. R. N. Norris, of the Harland Engineering Co. of Canada, recently returned to Montreal from a trip to the Pacific Coast, where he obtained the order for a Harland drive on the new 232-inch, 1,000 feet per minute newsprint machine being made for the Powell River Co. by Chas. Walmsley & Co. (Canada), Ltd.

St. Regis to Build at Cap Rouge

After purchasing $85,000 worth of land from farmers in the parish of Cap Rouge, a short distance from the Dominion Experimental Farm, the St. Regis Paper Co., has decided to start the erection of its pulp and paper mills at that point early in May, 1926. Timber will be obtained from the large limits of the company on the North Shore of the St. Lawrence and also from the Abitibi district.

Advantage will be taken of the Transcontinental Railway, which passes a short distance from Cap Rouge, to bring the wood, while the company will have several large boats operating between the North Shore and some points near the Quebec bridge, where landing facilities will be arranged.

The Department of Justice at Ottawa has ordered an investigation to be made by the Royal Canadian Mounted Police on the north shore of the St. Lawrence, where it has been reported that certain parties have illegally taken possession of privately owned timber limits and have stolen large quantities of pulpwood. Two officers of the "Mounties" accompanied by Detective Georges Roy, of Quebec City are about to leave for the north shore, where they may remain part of the winter to conduct their investigation.

President Thornton and a party of Canadian National Railway officials recently visited the huge power plant of the Duke-Price Power Company, at Isle Maligne, at the Grande Décharge of Lake St. John.

Among recent Ottawa incorporations is that of the Northern Ontario Pulp and Paper Co., Ltd., with an authorized capital of $5,000,000 and head office in Montreal.

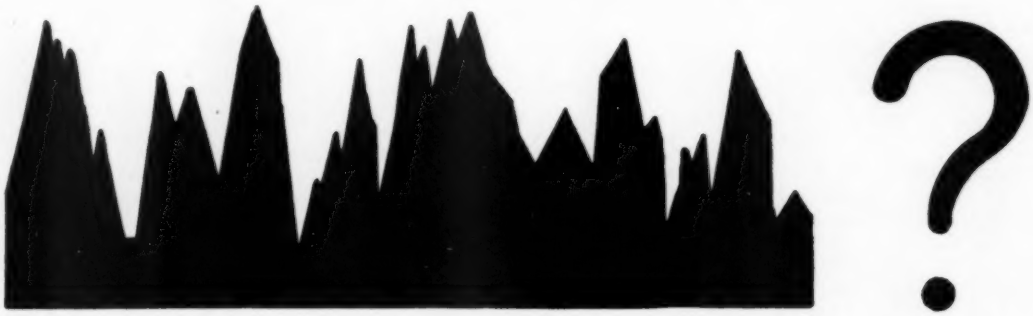
Arbitrator Appointed

Mr. Justice Coderre, of the Superior Court, Montreal, appointed J. H. Michaud, advocate, the third arbitrator of the board which will decide what compensation must be paid by the Quebec Running Streams Commission to J. E. A. Dubuc, of Chicoutimi, for damage occasioned to the latter's property through raising the level of Lake Kenogami.

Dubuc made a claim for compensation from the Running Streams Commission and the matter was referred to arbitration. The parties to the dispute chose as arbitrators William I. Bishop and Paul Béique, but the latter could not agree upon a third member, who has now been appointed by the court.

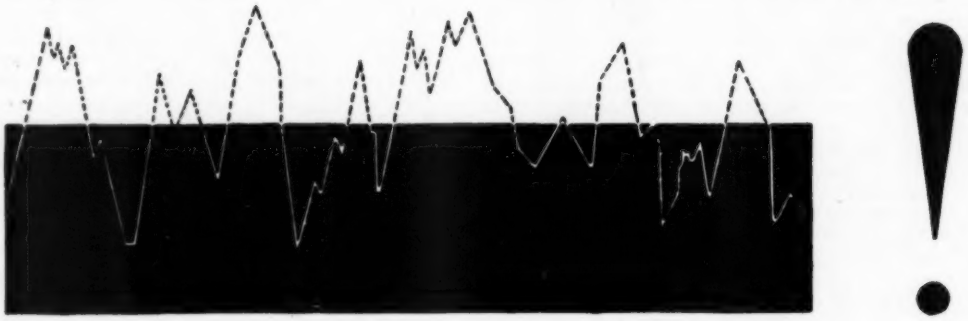
In his remarks to the shareholders in the annual report, president N. A. Timmins of the St. Lawrence Paper Mills,

WHY TOLERATE
A BOILER LOAD LIKE THIS



Make Boiler Constant by Installing

RUTHS STEAM ACCUMULATOR



With a Ruths Accumulator the boilers can supply steam at a constant rate independent of heavy fluctuations in the demand

Send for full particulars

COMBUSTION ENGINEERING CORPORATION LIMITED

POWER PLANT EQUIPMENT

STOKERS OF ALL TYPES · PULVERIZED FUEL SYSTEMS · STEAM TURBO-GENERATORS · HIGH SPEED STEAM ENGINES · AIR PREHEATERS · RADIAL BRICK CHIMNEYS · COAL HANDLING EQUIPMENT · ASH CONVEYORS AND HOPPERS · SUSPENDED FLAT ARCHES · DE-AERATORS · CONDENSERS OF ALL TYPES · OIL BURNING EQUIPMENT · PULVERIZING AND GRINDING MILLS · RECORDING INSTRUMENTS · INDUCED AND FORCED DRAFT FANS · DIESEL OIL ENGINES

HEAD OFFICE—TORONTO VANCOUVER, MONTREAL, WINNIPEG

said in part: "The production of newsprint has been well consumed, all things considered. The value of newsprint is gradually declining as we enter the present period of overproduction, and it is useless to hazard any opinion as to its future value. High cost mills, wherever located, will turn to other products, and conditions in the newsprint industry will automatically re-establish themselves on an even level."

In the neighborhood of four hundred men are being employed on the new paper mill of Port Alfred Pulp and Paper Co. at Port Alfred, and good progress is reported. It is stated that the main building is nearly completed, while the machinery will be set up and everything ready to allow the mill to be in full swing next spring.

ONTARIO

Fort Frances Expansion Will Affect Boundary Waters

Northern Minnesota settlers, owners of summer cabins, and all who are interested in the lakes and canoe trails of the Arrowhead region have suddenly awakened to the significance of the plans of Fort Frances Pulp & Paper Co., Fort Frances, Ont., to alter the levels of virtually all of the boundary way waters touching that state. It was not until recently that information regarding the plans of the company had been given any general circulation, but already a movement is being started to block them.

It is recognized that a long fight is in progress. The matter is one of great importance to the company, which is controlled by E. W. Backus. It is a question for the joint international commission to decide, and the Canadian members are likely to be friendly, it is pointed out, for the reason that a big industrial development will take place in the Dominion, while most of the harm will be done on the American side.

The project will cost between $2,000,000 and $3,000,000 and will take about three years to complete. It involves the raising of the level of Little Vermillon Lake by 72 feet, raising the level of Loon Lake by 33 feet, and raising the level of Lac La Croix 12 feet. The water of other lakes will be correspondingly raised, and virtually all of the boundary waters from Kettle Falls to Gunflint Lake will be affected.

The first session of the international joint commission appointed to consider the matter was held at International Falls, Minn., on September 28. The commission has been asked to ascertain what elevations are recommended, to what extent it will be necessary to acquire lands and construct works and what interests on each side of the border would be benefited. The Canadian National Railways and the town of Fort Francis have already filed protests against any proposal to change the level of the boundary waters. Less formal intimations of objections have been received from the Department of Indian Affairs, Ottawa, the Winnipeg Electric Company, the Department of Fisheries, the Interior Department of Ontario, the Manitoba Power Co., Ltd., the city of Winnipeg, the Lake of the Woods Milling Co., the Province of Manitoba and the town of Rainy Lake.

The affairs of Dryden Paper Co., Ltd., Dryden, Ont., have taken a decided turn for the better. In contrast with a long period of losses on operations, the company has been able in recent months to show manufacturing profits, which have been steadily increasing from month to month, owing partly to improvement in the chemical pulp market and partly to better times in the Canadian West, resulting in a wider market for the company's products.

Fort William Paper to Buy Kaministiquia Power

The deal for the purchase of the Kaministiquia Power Co. by the Fort William Paper Co. has been practically completed. Under the terms of the deal shareholders of Kaministiquia Power will receive the equivalent of $145 a share for their stock, payable $95 per share in cash and the balance in 7 per cent cumulative preferred shares of a new power company which will be incorporated by the new interests, possibly under the same name as at present. For the additional protection of preferred shareholders, it has been arranged that three of the present Kaministiquia directors will be on the board of the new company.

Kaministiquia shareholders have received a circular signed by Sir Herbert Holt, president of the company, in which the plan is outlined. The circular states that since the entry into the Fort William field of the Hydro-Electric Power Commission of Ontario the company has been faced with numerous difficulties; also, as a result of contracts made with the Hydro, first by the city of Port Arthur and later by the city of Fort William, it became necessary for the directors of the company to find a new market for a considerable portion of the output. For this purpose Kaministiquia assisted Fort William Paper Co. in the establishment of its pulp and paper mill at Fort William. It is felt by the directors that risk of further unfriendly action will be greatly diminished when control of the company passes into the hands of a large Ontario industry such as is proposed.

A meeting of the shareholders has been called for September 30, when the deal will be considered and, it is presumed, accepted.

New Directors of Fort William Paper

Geo. R. Gray, of Sault Ste. Marie, was elected president of Fort William Paper Co., Ltd., at a meeting of the board of directors. Mr. Gray succeeds Col. Thomas Gibson, who died last winter. W. N. Hurlbut, of Dayton, Ohio, was elected to the board to fill the vacancy, and also takes the vice-presidency vacated by Mr. Gray. The other vice-presidents are P. B. Wilson and C. H. L. Jones, of Sault Ste. Marie, and the directors include Geo. H. Mead, of Dayton, who is chairman of the board, Sir Herbert Holt, J. S. Norris, T. H. Watson and N. M. Patterson.

It was reported a short time ago that there would probably be a merger of the Mattagami Pulp & Paper Co. and the Spruce Falls Co. J. H. Black, president of the latter, has stated, however, that there is absolutely no foundation for the rumor, and he is at a loss to understand how it started.

Geo. H. Mead Predicts Paper Merger

At the recent annual meeting of the Spanish River Pulp & Paper Mills, President Mead, discussing newsprint prices, expressed the opinion that a reduction of possibly $5 was due to come into effect with the turn of the year. He thought that when prices finally stabilized it would be found that the old established companies would be in better position than the newer ones on account of operating efficiency.

With reference to the merger situation, he predicted that one or more would go into effect within twelve months in the interest of efficiency. There was nothing new, however, in the Abitibi-Spanish River situation. Considerable importance in this connection is being attached in paper circles to the recent activities of Spanish River interests in connection with paper and power properties, not only in Ontario but in Quebec and Manitoba as well.

The old Foley-Riegler groundwood mill at Thorold, which was formerly owned by the Beaver Products Co., Inc., Buffalo, N. Y., has been sold to H. O. Babcock, of Niagara Falls, N. Y., who also owns the Davy mill next door. The plant is being overhauled and will soon start up manufacturing groundwood after having been idle for many months.

Permanent bonds of the issue of $16,000,000 Minnesota & Ontario Paper Co., first mortgage sinking fund 6 per cent bonds are now ready to exchange for the temporary bonds outstanding. The original issuance of these bonds was in May, at which time it was believed to be the largest single issue of bonds ever brought out for the development of the pulp and paper industry.

Start of Rayon Industry in Canada

As marking the inauguration of rayon manufacture in Canada, the new artificial silk plant of Courtaulds, Ltd., at Cornwall, it is stated, will employ about 500 people, the first unit of the plant having an average production of 25,000

HARLAND

"INTERLOCK" SECTIONAL ELECTRIC DRIVE

AN OPINION

By the Owner of a 150 Inch 100/500 FPM Book Machine
June, 1924

"This machine and your Electric Drive have now been in operation 15 months and it is giving us excellent satisfaction. It is very easy to change speed and remains very uniform at whatever speed set, so that we have fewer complaints from customers of variation in weight of paper made on this machine than we have on paper made on our other machines with Mechanical Drive."

By arrangement with U. S. A. manufacturers we are now supplying Harland Equipment made in U. S. A.

HARLAND ENGINEERING CO.
MONTREAL

pounds weekly. It is stated by one of the leaders in the sulphite pulp industry that by the end of this year the rayon industry will absorb about five per cent of the total sulphite production in the world. In view of this fact it is reasonable to suppose that in the future the sulphite manufacturers of Canada can expect to sell in this market an ever increasing proportion of their output.

According to a charter just granted the St. Claire Lumber & Salt Co., Ltd., Sarnia, Ont., the company is authorized to engage in business as pulpwood operators and dealers in other wood products. The authorized capital is $2,000,000.

Bartram Paper Products, Ltd., Ottawa, has been organized and granted a Dominion charter with power to manufacture and deal in paper and paper products. The authorized capital is $55,000, and the incorporators are C. M. Bartram, paper expert, S. J. Gourlay, Earle Gourlay and C. Bartram, Ottawa, and V. T. Bartram, Toronto.

The Fort Francis Paper Co. have purchased from the Taylor Stoker Co., Ltd., one 8-retort, 21-tuyères, Type "H" Taylor stoker for its paper mill at Fort Francis, where it will be installed under an 800 h.p. B. & W. boiler, operating at 285 lbs. pressure. It will be capable of operating this boiler continuously at 300 per cent of rating, and for peak loads of short duration the installation can be pushed to even higher ratings.

Great Lumber Fire at Hawkesbury

More than fifty million feet of lumber, property of the Hawkesbury Lumber Co., Ltd., was destroyed by fire, which broke out early last month in a pile at the west end of the island on which the company's yards, mills and houses are located just opposite the town of Hawkesbury, in the Ottawa River. The loss, which is estimated at over $1,000,000, represents practically the whole of the company's production for this season.

Luckily for the town of Hawkesbury the wind was blowing in an opposite direction, for the great draft from the cauldron of fire carried huge burning planks as high as two hundred feet in the air and for long distances. The town of Grenville, on the opposite side of the river, was showered with embers and dust from the burning lumber.

Owing to the combined efforts of the fire brigades of the company, of the town, and of the Riordon Company (International Paper), aided by a detachment of firemen from Ottawa, the conflagration was confined to the yards, and the mills and houses of the company and the town pumping station were undamaged.

Charles A. Magrath, chairman of the International Waterways Commission and former fuel controller of the Dominion, has been appointed chairman of the Ontario Hydro-Electric Power Commission to succeed the late Sir Adam Beck. C. Alfred Maguire, ex-mayor of Toronto, has been appointed a commissioner.

The Quinte & Trent Valley Power Co., operated by the Canadian Paper Board Co., has completed plans and will proceed with the construction of a new hydro-electric generating plant at Frankford, Ont., to be used for paper mill operation and other service. The estimated cost is in the neighborhood of $250,000. Work is also to be commenced shortly on the company's power plant at Campbellford.

The pulp mills, and to some extent the paper mills, of Thorold and Merritton have been handicapped owing to low water in the old Welland canal. The action of the federal government in shutting off the feed to raise the water level in the new canal in order that navigation might not be entirely tied up has caused a serious state of affairs.

John F. Ellis, the veteran head of the Barber-Ellis Co., Toronto, who is now in his eightieth year, has been present at the Canadian National Exhibition on the annual Manufacturers' Day for forty-seven consecutive years. This constituted

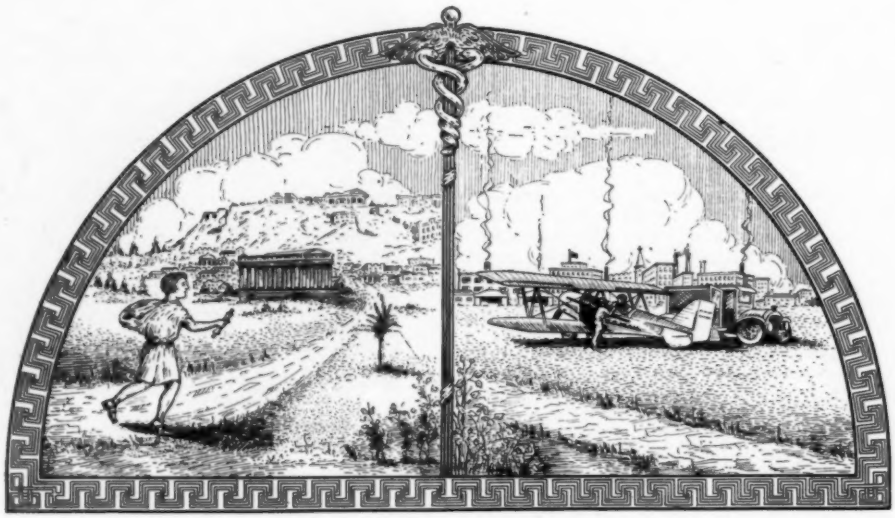
TESTED

Every Mill Type Camachine is subjected to a running test before shipment. Conditions are made to approximate actual mill working conditions, and a mill roll of paper or board is wound up, as a final check on the service which has been built into the winder. This test is important, because it demonstrates that the winder will function 100 per cent. when it is finally set up in the mill.

Correctly designed, neat and workmanlike in construction, rigorously inspected, and thoroughly tested, each Camachine is as good as can be made before it leaves our shop.

Complete information on the Camachine line of Mill Type Roll Winders will be sent to you for the asking. If you would like to have a specific quotation on the winder best suited to your needs, just tell us the kind of paper you make, the width of web and the diameter of finished rolls required.

Cameron
Machine Company,
57-61 Poplar Street,
Brooklyn, New York.



Giving wings to the written word

WHEN Greek met Greek in the ancient days and business negotiations were started, the final decision usually required person-to-person conference. When it happened that the outcome was delayed and the closing date of the option was near at hand, then indeed did the letter transport of those days reveal its deficiency.

Many a time did the Attic business man write his belated acceptance upon a piece of treated sheepskin imported from Pergamum, roll this about a rounded stick, seal it with a wax impression from his official ring, and entrust it to a fleet-footed son of Hermes. Woe to the business deal if the messenger developed a weak heart or a stone-bruised heel.

The time that it required Athenian "special delivery" to convey a message from that center of culture to Megara, 30 miles away, now serves as quite enough for the winged descendants of Kitty Hawk to lift a half-ton of modern correspondence across the roofs and tree tops between New York and Chicago.

No longer does the mild-mannered sheep supply the basis of written records and the interchange of business agreements. Vegetable fibres—cellulose from shrubs and trees—white, and easy to write upon, now carry the business world's "yes" and "no."

Hammermill Paper Company

Erie, Pennsylvania

a record in any industry so far as Canada's great national fair is concerned. Mr. Ellis is a former president of the Canadian Manufacturers' Association and was for several years its treasurer. Three years ago he was president of the Canadian Paper Trade Association. He is enjoying excellent health and is at business every day.

Mattagami Installing Bleach Plant

The Mattagami Pulp & Paper Co. are installing a high density bleaching equipment at their mill at Smooth Rock Falls. The capacity of the mill is about 200 tons of unbleached sulphite a day, and by January 1 next 50 per cent of the output will be bleached, and in time the whole of the output.

S. R. Armstrong, general manager of the company, recently stated that the company were finding a ready market for their unbleached pulp.

MANITOBA

Backus in Suspense After Ottawa's Answer

The reply of the Dominion to the application of the Backus-Seaman interests for pulpwood concessions in Manitoba, with a view to the erection of a $5,000,000 news print mill at Winnipeg, has been sent by Hon. Charles Stewart, Minister of the Interior. Referring to berths south of township 47 the reply states: "As soon as we are able to complete selections for the Manitoba Pulp & Paper Co., the remaining timber will be available for disposal under the timber regulations. Until such selections are made, however, we are not in a position to dispose of pulpwood rights in this area, except insofar as individual watersheds may be released from the reserve as selection progresses. If our selection should show that within the selection area south of Township 47 there is wood sufficient to justify two 100-ton mills, we would be prepared to negotiate a sale to provide a mill of 100 tons' capacity on the same terms and at the same average bonus as that acquired by the Manitoba Pulp & Paper Co. under the contract. All further wood supplies for both mills to be acquired by public competition."

With regard to the application for an undeveloped water power adjacent to the mill, the reply draws attention to the fact that there are at present three plants in operation on the Winnipeg River with at least 100,000 horsepower that can be made immediately available for use, with two transmission lines already constructed to Winnipeg. It adds that with government control of rates the power required for the operation of the mills will be available at rates which will compare favorably with the price of power which the company could produce from the development of any site at present unallocated on the Winnipeg River.

As to the region north of Township 46, which contains two, and possibly three, legitimate developments, any sales to be made must necessarily be by public competition, in order that others interested may be afforded the opportunity to compete. The government is prepared to offer for sale at once, by competition, the pulpwood privileges in the Saskatchewan River area, under terms similar to those under which the Manitoba Pulp & Paper Co. secured and will operate its concessions.

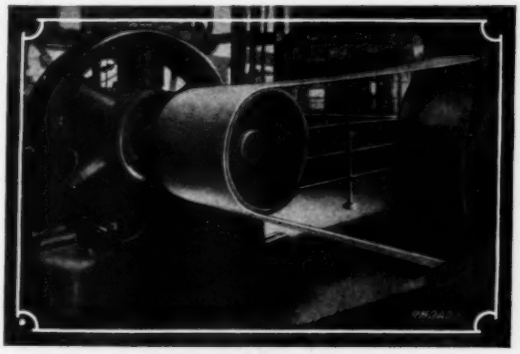
Mr. Stewart informed Mr. Seaman that, upon the premises outlined, the government would be glad to take any consistent steps to ensure prompt commencement in construction of a competing pulp and paper mill at Winnipeg.

Mayor R. H. Webb, of Winnieg, who is a well-known lumberman, recently delivered an interesting address before the Kiwanis Club, of Brandon, on "Pulpwood." He urged the citizens of Manitoba to take cognizance of the action of the Dominion Government in connection with the recently sought application of the Backus-Seaman interests for a pulpwood berth in Manitoba.

Manitoba Pulp and Paper to Call for Tenders Shortly

Tenders are expected to be called for shortly in connection with the new pulp and news print mill to be erected by the Manitoba Pulp & Paper Co. at Fort Alexander. Excavation work on the site has been practically completed, but new plans

RHOADS
Tannate Leather Belt



Tannate Grip Gives More Output

SIX years ago a Pennsylvania paper mill installed a 40-inch Rhoads Watershed Tannate Belt on a short, hard drive from a water-wheel to a generator.

This belt was sold them "to transmit 350 H. P." The superintendent recently said, "It is now transmitting 485 H. P." although the speed was not increased. This steady overload has made "a few repairs" necessary. But he is well pleased with his Tannate Belt.

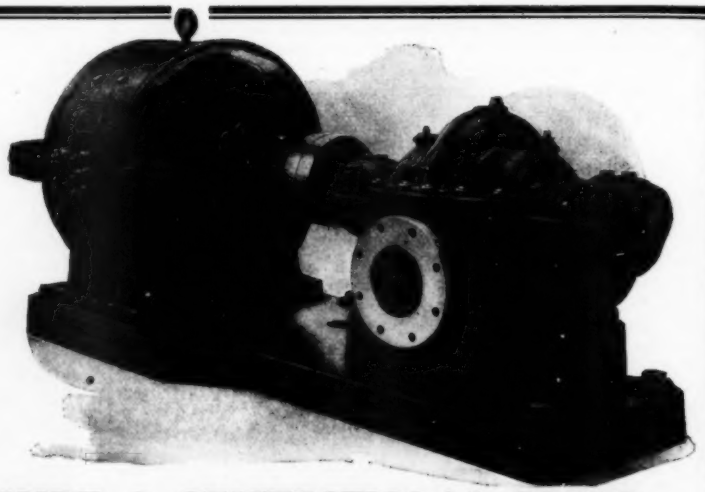
The strong grip and longer life on hard drives makes Rhoads Watershed Tannate Belts almost ideal for difficult paper mill drives. The stronger grip transmits more power, often increasing output. It is output that counts for profits.

J. E. RHOADS & SONS

PHILADELPHIA	47 N. Sixth St.
NEW YORK	112 Beekman St.
CHICAGO	334 W. Randolph St.
ATLANTA	89 S. Forsyth St.

Factory and Tannery, WILMINGTON, DEL.

TANNATE TRADE MARK



THE IMPROVED TYPE S CENTRIFUGAL PUMP

With Self Excited Synchronous Motor Drive

A complete Allis-Chalmers pumping equipment (combined responsibility) for which there are numerous applications. Our customers who have bought these units are very much pleased with them.

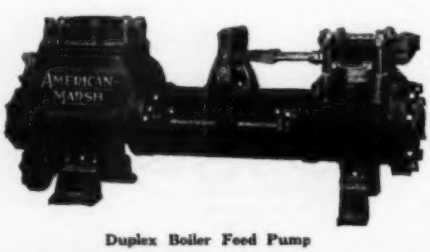
ALLIS-CHALMERS MANUFACTURING CO.

MILWAUKEE, WIS. U.S.A.

AMERICAN-MARSH PUMPS

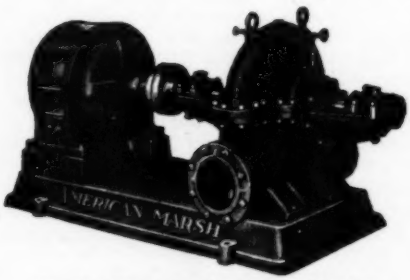
Pumps of Proven Durability

FOR more than thirty-five years American-Marsh Pumps have been giving the highest type of service, day after day and year after year, and that's what really counts. That is the reason for their success. American-Marsh pumps are of simple, sturdy design. No troublesome slide valves. No tie rod construction. Heavy phosphor bronze bolted-in type of removable water cylinder bushing and bronze piston rods. Tested for load capacity and guaranteed to give satisfactory service.



Duplex Boiler Feed Pump

Write for Bulletins on the type you are interested in



American-Marsh Double Suction Split Case

The Line Includes

Boiler Feed Pumps
Suction Box Pumps
Wet and Dry Vacuum Pumps
Air Compressors
Bilge Pumps
Condensation Pumps
Centrifugal Pumps
Paper Stock Pumps

American Steam Pump Co.

BATTLE CREEK, MICH.

Chicago Office
1220 Monadnock Block

New York Office
17 Battery Place

for the mill have been required, owing to the fact that foundation tests on the proposed site have necessitated a new location.

In the meantime, however, the camp buildings have all been completed. The branch line connecting the Grand Beach line of the Canadian National Railway and Fort Alexander on Lake Winnipeg is being graded and excellent progress is reported. The company subsequently expect active construction work to commence this fall.

BRITISH COLUMBIA

Delay Granted in Whalen Liquidation Sale

The Whalen Pulp and Paper situation took on an unexpected, and rather hopeful, aspect when a thirty-day delay of the liquidation sale was granted by the courts in consideration of an eleventh-hour plan submitted on behalf of the debenture stockholders over the signature of J. R. Harbeck. It was only an hour or so previous to the time set for the sale that the plan was submitted. The court delayed action until October 1st, and the delay was subsequently extended to October 30th.

The plan tabled by Mr. Harbeck is made subject to the entire undertaking, properties and assets being purchased by a trustee on behalf of the first mortgage bondholders, debenture stockholders and unsecured creditors, and transferred to a new company in consideration of: the issue of 6 per cent, twenty-five-year first mortgage bonds of the new company in an amount equal to the presently outstanding Whalen first mortgage bonds; the issue of $2,500,000 to $3,000,000 of 7 per cent ten-year sinking fund gold notes, to provide net working capital of not less than $1,500,000 after the discharge of current obligations; the issue of 6 per cent, non-cumulative preferred stock in an amount equal to the par value of the outstanding debenture stock; and the issue of common stock in such amount as approved by the signees of the plan.

Under the plan the first mortgage bondholders will receive par for par of the new bonds; the debenture stockholders will receive par for par of the new preferred stock, and the unsecured creditors will receive 50 per cent of their claims in common stock based on its book value, in the estimate of which goodwill is not to be taken into consideration.

The signee agrees to purchase the new notes to the amount of $2,500,000 to $3,000,000, at 90 and interest, in consideration of being ceded the common stock issue.

Good Progress at Powell River

Rapid progress is being made with the construction of a concrete machine room by the Powell River Company. This will eventually house two news print machines. The first of these is already under construction at the works of Chas. Walmsley & Co. (Canada), Ltd., at Longueuil, Que. This will be a 232-inch machine designed to run at from 600 to 1,000 feet per minute, and will be driven by the Harland Interlock Sectional Electric Drive. The machine will have a suction couch roll, three straight wet presses, forty 60-inch driers, four felt driers, a ten-roll calender, Pope reel, and the regular Walmsley winder. Delivery of this first machine is set for April, 1926.

Damage estimated about $25,000 was sustained recently by the National Paper Box and Carton Co., Vancouver. The interiors of the two buildings housing the plant were destroyed by fire, the stock ruined and expensive machinery damaged. The blaze is believed to have started in some paraffin in one of the buildings. A printing press, recently installed at a cost of $10,000, and two expensive motors were among the equipment damaged. The owners of the building are G. Moyer and R. Barker, who have announced that repairs will be made and work resumed.

NEW BRUNSWICK

Paper Box Industry Active

The Sackville Paper Box Co., Sackville, is now producing paper boxes for the hat and cap, boot and shoe, underwear, hardware, and confectionery trades. The company is manufacturing both the plain and fancy boxes, folding and set-up boxes, and waxed and unwaxed boxes. They recently intro-

The LENIX DRIVE

(Trademark Reg.)

7½ H. P. Motor Driven Thread Dresser.
Motor Pulley 5½" Dia., 8" Face.
Dresser Pulleys 21" Dia., 4" Face, Tight and Loose.
Pulley Centers 3'3".

THE installation illustrated is one of **six** drives in the plant of a foremost shoe manufacturer.

The tight and loose pulley arrangement is successfully maintained in connection with the Lenix Drive. The soft elastic pull of the belt drive is combined with the modern requirements for economy of floor space, and the steady, gradual acceleration of the machine insures a uniform strength of the threads.

The Lenix is not an idler. It is a "belt wrapper" scientifically applied to belt drives for the purpose of eliminating belt slippage, saving floor space and increasing the general capacity of the drive.

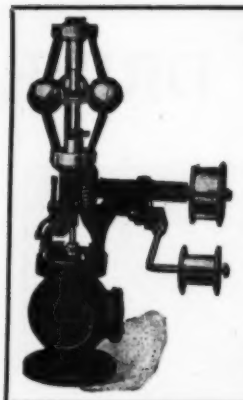
Booklet **"Saving Slippage and Space"** tells more about the Lenix.

Send for a copy

F. L. SMIDTH & CO.

Engineers

50 Church St. **New York, N. Y.**



How Much *Paper* Are *You* Losing Because of Uneven Thickness?

During the past three years we have developed wide experience in building Governors for Engines and Turbines in Paper Mill service, resulting in uniformly thick paper, and a considerable increased production.

Catalog 32 on request.

THE PICKERING GOVERNOR CO.
Portland, Conn., U. S. A.

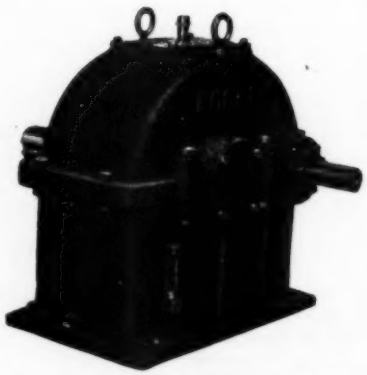
TRANSMISSION FALLS MACHINERY

Every appliance needed to transmit power by belt or rope. Correctly designed. Honestly built. Consistently priced.

Engineering Service Gratis. Write today for 300 page Catalog—Handbook No. H. B.

The Falls Clutch & Machinery Co.
CUYAHOGA FALLS, OHIO
NEW YORK 206-208 Fulton St. BOSTON, MASS. 52-58 Purchase St.

POOLE
REDUCTION GEARS



Sturdy—Reliable—Efficient

Double helical cut forged steel heat treated gears throughout. Chrome vanadium steel driving pinion. Designed and built to give long life with minimum upkeep.

Bulletin 105 tells more about these gears.

Poole Engineering & Machine Co.
Woodberry, Baltimore, Maryland

FAWCUS
Herringbone Gear Reductions

They increase production, save labor and decrease wastage on Calenders. Write for literature. Special Machinery—Couplings—Gears.

FAWCUS MACHINE CO., Pittsburgh, Pa.
2819 Smallman St.

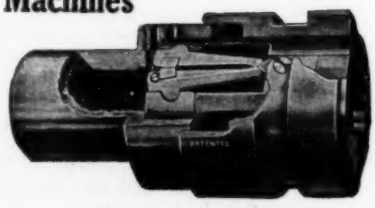
THE JOHNSON FRICTION CLUTCH

Single Clutch with Pulley

Controls Perfectly on Paper-Making Machines

Install Johnson Clutches on your paper machines and you get perfect, absolute, trouble-free control. Put in the Johnsons and forget clutch annoyances. No further attention needed save occasional lubricating and adjusting. Johnsons start the machines quickly, stop them instantly, and control them always. Equip your paper machines with Johnson Clutches. Full data free.

WRITE FOR CATALOG "P.I."



Single Clutch, Sectioned

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN

duced a waterproof cardboard box for use in packing berries in accordance with the standard box plan. This type of box was devised to meet the needs of growers of all kinds of berries and are also for wild berries and for small fruit of every kind.

The Corona Co., Ltd., of St. John, has been maintaining its box and carton manufacturing plant at capacity. It specializes in confectionery boxes, including high grade chocolate boxes. At present it is producing about 2,000 boxes daily, including all sizes from half a pound to five-pound capacity.

For many years efforts have been made to introduce a standard box in which to pack berries, which would give producers a good chance to penetrate the United States market. It is believed that the introduction of the standard box will be a boon to the paper box plants, as it will allow them to compete for the trade of the berry growers. Anticipating the demand, some of the manufacturers have started the manufacture of a waterproof cardboard berry box that is expected to compete successfully with the wooden boxes. A number of growers who are planning to ship to the United States have signified their willingness to use the paper boxes.

W. B. Snowball, member for Northumberland in the last Dominion Parliament, died recently after an illness of less than twenty-four hours. Mr. Snowball was one of the prominent lumber merchants of the province. He was president of the J. B. Snowball Company, limited and a director of the Canadian Lumbermen's Association.

NOVA SCOTIA

Possible Developments at Hantsport

For some weeks engineers have been surveying several sites at Hantsport on behalf of parties interested in a project to build a pulp and paper mill there. The Avon Power Company, which had planned on erecting a plant for the production of pulp at least at Windsor, is understood to be fostering the project.

A number of directors of the Avon Power Co. have been looking over various sites at Hantsport, all of which appeared satisfactory. It is declared that sufficient water power is available at Hantsport to operate the mill. The intention is to produce unbleached and bleached pulp at the outset, and to install at least one newsprint machine. Apparently the pulp and paper will be marketed largely in the United States.

Looking Over Bear River Mill

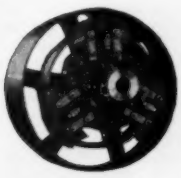
J. G. G. Kerry, of Toronto, president of the Canadian Paperboard Co., recently went on a business trip to Nova Scotia. He looked over the plant of the Bear River Pulp Company, which recently passed into the hands of the receiver, and into the possibilities of power development on the Bear River at the mouth of which stream the plant is located.

Later, Mr. Kerry visited Halifax where he saw Hon. E. H. Rhodes, premier of the province, and others, and discussed the situation. No announcement followed the conference; but it is believed that Mr. Kerry's interest in the project presages important developments at an early date. It is understood that Mr. Kerry while in Nova Scotia devoted some attention to other pulp projects which are in process of development.

The Grand River, in Richmond County, is the proposed site of a pulp and paper mill, and Stuart McCawley and John A. McAskill, of Glace Bay are forming a company to operate it. Application has been made to the Provincial Government for water power rights on the Grand River, and it is understood that the Government will be asked for assistance in financing the project, probably in the way of guaranteeing the bonds of the company. Options on properties required for the proposed plant have been secured, and it is the general feeling that the mill will materialize.

W. J. Gage & Co., manufacturing stationers, Toronto, recently had three sprinkler heads explode in their establishment, and the water poured down on their large stock of paper. An alarm was sent in and, owing to the quick response of the fire department, the stocks of paper and printing machinery were covered with tarpaulins with the result that there was but little interruption to the work of the company.

"Cleveland Type" Collar Oiling Bearings


"Smith Type" Hill Friction Clutches

"Industrial Type" Spur Gear Speed Transformers

There's a Reason Why
the Pulp and Paper Mill Industry Use

"Hill Clutch" Mill Equipment

featuring

"Smith Type" Hill Friction Clutches
"Cleveland Type" Collar Oiling Bearings
"Industrial Type" Spur Gear Speed Transformers
"Steelarm" Automatic Belt Tighteners
Agitator Equipment of All Kinds
Flexible Couplings

Your wants mean more to us than "so much material." A careful study is made by Engineering Experts skilled in Power Transmission problems. You receive the accumulated experience of "half a century" serving the Pulp and Paper Mill Industry.

The Hill Clutch Machine & Foundry Co.

Power Transmission Engineers
General Office and Plant
Cleveland, Ohio
New York Office, 41 E. 42nd Street

READING C AND B

Traveling Cranes

ALL STEEL CONSTRUCTION

Manufactured by the Makers of

READING C AND B

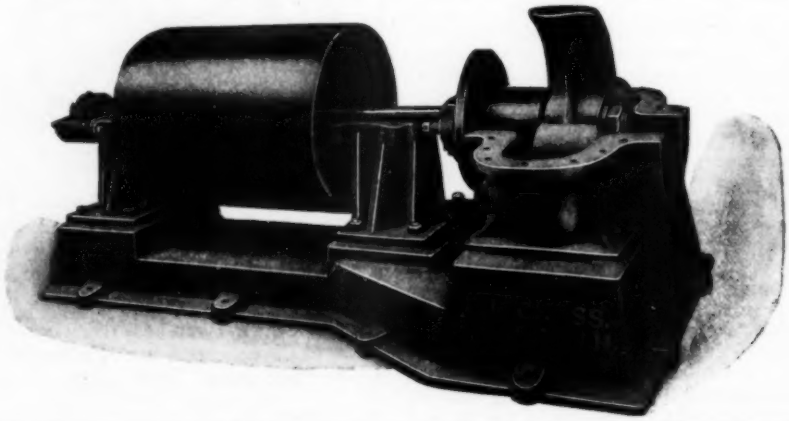
PRODUCTS

Chain Hoists — Electric Hoists
Trolleys — Mono-Rail Systems

Send for Catalog

Reading Chain and Block Corporation

READING, PA., U. S. A.



for handling STRINGY Stock, Cross Pumps are efficient and dependable

E. M. CROSS MACHINE CO., Berlin, N. H.

"MICHIGAN" Combination Steel and Wood Pipe

LONG DISTANCE CONVEYOR OF WATER AND PAPER STOCK IN PAPER AND PULP MILLS—Specially Adapted to Carry Sulphite, Ground Wood and "White Water"

Eighteen reasons why you should use "Michigan" combination steel and wood pipe

1—Durability of Wood Shell. 2—Sanitary. 3—20% more capacity than Cast Iron Pipe. 4—Simplicity in handling. 5—Light in weight. 6—Speed in laying. 7—Protects against freezing. 8—Not affected by Electrolysis. 9—Rigid inspection of materials. 10—Efficient construction of stave. 11—Strength of steel banding. 12—Protection of banding with asphalt coating. 13—Cannot burst under pressure. 14—Can be laid in a wet trench. 15—Short curves without specials. 16—Low installation and maintenance cost. 17—Responsibility of company. 18—Not affected by sulphur or chemical solutions.

THE MICHIGAN PIPE COMPANY

Dept. 17 **BAY CITY, MICHIGAN**

New York City, N. Y.....17 East 42nd St.
Oklahoma City, Okla.....105 West 16th St.
Chicago, Ill. .....Leiter Bldg., 15 East Van Buren St.
Boston, Mass.....Room 737, Oliver Bldg.
Cleveland, Ohio.....919 Ulmer Bldg.
Chattanooga, Tenn.....702 James Bldg.
Philadelphia, Pa.....318 Widener Bldg.
Pittsburgh, Pa.....323 Fulton Bldg.

"Steel for Strength—Wood for Durability"

Northern New York News

October 1, 1925.

DeGrasse Company Loses Suit

Referee James C. Dolan handed down a decision in favor of the plaintiff in the case of Murray A. Dodds, of Canton, against the DeGrasse Paper Company, of Pyrites. The case was to recover damages for the alleged pollution of the waters of the Grasse River from refuse discharged into the stream by defendant's mill. The decision awards damages amounting to $1,000 and permanently enjoins the company from continuing the practice.

In order not to work any unnecessary hardship on the defendant, the DeGrasse company was given until Jan. 1, 1926, to install filters by which the injurious substances would not be discharged into the river.

Richard O. Osborn, hydraulic and electrical engineer of the Newton Falls Paper Company, Newton Falls, had a narrow escape from death last month. While supervising work near the dam he slipped and fell directly over the waste headgates into the spillway and was carried down the rapids. He managed to grasp the root of a bush growing along the bank and held on until he was rescued.

The Oswegatchie Paper Company, at Natural dam, is installing a modern water wheel manufactured by the James Lefell Company, of Springfield, O. The new wheel will replace the turbine which has been in use several years. It is horizontal type and will develop 350 horsepower which will be used in the grinding of pulp. A high tension service line has been extended to the mill which will furnish additional power.

More than 100 forests containing more than 3,000,000 trees have been started in the several communities of New York state. The largest village forest in the state is that owned by Carthage, Jefferson county, covering 641 acres and containing 641,000 trees. Other North Country forests are: Village of Black River, 600 trees; Canton board of water commissioners, 80,000; town of Constable, 5,000; town of Croghan, 5,000; village of Lyons Falls, 13,000; village of Malone, 65,000; village of Fort Leyden, 31,000; village of Sandy Creek, 22,600; village of Saranac Lake, 1,000; village of Sodus, 6,000; Franklin county, 25,000.

Charles R. Outterson, for the past three years president and general manager of the Adirondack Mineral Company, has resigned his position and is succeeded by James J. Butler, of Carthage. The Adirondack Mineral Company manufactures paper mill size, beater clay and other paper mill chemicals and products.

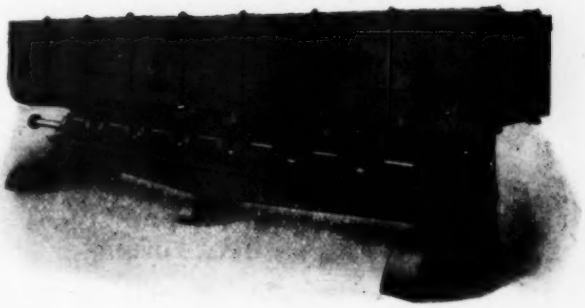
Carlisle in Rayon Company

The Carlisle interests headed by Floyd L. Carlisle, known in paper and power circles, have embarked in the manufacture of rayon, the trade name for artificial silk. Floyd L. Carlisle has been elected chairman of the board of directors of the Skenandoa Rayon Corporation, at Utica, with a capitalization of 600,000 shares of common and 35,000 shares of preferred stock. A company with the same backing has been formed to operate a similar plant at Oswego. Others on the board are H. E. Machold and William K. Dick, both members of the St. Regis Paper Company organization.

Seek Reduction in Rates on Wall Paper

Charging that unjust and discriminatory rates are being assessed on oatmeal and ingrain wall paper, the Standard Wall Paper Company, of Hudson Falls, has filed with the Interstate Commerce Commission at Washington a complaint against the Rutland and the Delaware & Hudson railroads. The Standard Wall Paper Company ships large quantities of oatmeal and ingrain wall paper in large rolls from the Stark Paper Company in Bennington, Vt., and cuts the paper into commercial sizes, some of which is printed in designs. The product is marketed through the H. C. Craig Company,

Quality Pulp



Through Barker-Internationals

Latest approved designs—simple—few parts.

High grade workmanship and materials.

Uniform suction and blast.

Made in sizes from 6 to 18 plates.

Repeat orders are our best endorsement

Barker Quick Opening Stock Valve

Plug and seat ground to fit, practically non-plugable, quick acting. Made of cast iron and bronze plug, all bronze or all cast iron. Sizes 6 to 12 inches. Its simplicity and strength are apparent at a glance.

Write for Bulletin with complete description.

Green Bay Barker Co.

Green Bay, Wisconsin

Makers of the famous Green Bay Barker

Detroit Graphite Company

DETROIT, U. S. A.

DEGRACO PAINTS
All Colors for Your Particular Needs

Specializing in the manufacture of paints in all colors to meet the particular requirements of paper and pulp mills.

A special service that will solve your painting problems.

Offices and warehouse stocks in all principal cities

Today

Positive Dryer Temperature Control and Condensate Drainage is a Necessity

Investigate the

"ARMSTRONG METHOD"

Write Now

For full information, details of trial offer, references of users, and what it has done for others

ARMSTRONG MACHINE WORKS

322 Maple Street
Three Rivers, Mich.

168 Washington Street
New York City

Inc., of New York. All three companies joined in the complaint.

All other kinds of wall paper, unfinished and unprinted, in rolls shipped from North Bennington to Hudson Falls is given a rate of 16 cents per 100 pounds in carload lots and 31 cents a hundred in carload lots, while oatmeal and ingrain paper, unfinished and unprinted, in rolls, is charged 18 cents in carload lots and 34 cents in less than carload lots, the complaint charges.

Homer E. Stafford, for 29 years connected with Knowlton Brothers Paper Company, the last 15 years of which he was general superintendent, has completed his service with that company. He is succeeded by Alfred J. Wightman, of Kalamazoo, Mich. Mr. Stafford, who is national vice-president of the International Association of Pulp and Paper Superintendents, has made no definite plans for the future. He expects to spend the winter in Florida.

Another shipload of pulp for the A. P. W. Company's plant at Albany, has arrived at that port from Nova Scotia, making the entire trip by water without breaking cargo. The cargo came on the Scandinavian freighter, Urter, and consisted of 1,200 tons. Two ships, the Urter and Facto, are now making regular trips from Nova Scotia to Albany with cargoes of pulp and will continue to do so until the river freezes for the winter.

Almost unprecedented rains took place in Northern New York during September which was of immense benefit to the paper mills. Dry weather had continued for several weeks before the rains and all streams were exceedingly low. Rain fell practically every day for an entire week, filling the streams and ponds to the banks.

Plans for a gigantic power merger in Northeastern United States in which the Power Corporation of New York and the International Paper Company will play leading parts, are nearing completion. The International Paper Company, with its developed and undeveloped power which is controlled by its subsidiary, the International Hydro-Electric Corporation, is taking an important part in the proceeding. The third party to the merger is the New England Power Company.

Organization in Carlisle Mills

A series of employees' meetings for the men employed in the Carlisle group of paper mills in Northern New York has been arranged. Five Northern New York towns have Carlisle paper mills in them and it is the plan of the unions to hold a meeting every three months at which representatives from the various mills will be present.

One of the meetings was held at Gouvernur, Sept. 20. Though there is no Carlisle mill at Gouverneur, that village was selected as the meeting place on account of its central location. The employees hope to bring out a unification of the working conditions and a better feeling between employer and employee.

The Waddington Pulp Company, operating a pulp wood terminal at Waddington, has been obliged to put on two shifts of men to handle the large amount of pulp wood which is being unloaded there. For a time, freighters loaded with pulp wood were obliged to berth on the Canadian side of the St. Lawrence. The company expects to handle about 750,000 cords of pulp wood before the navigation season closes.

J. J. Hubka has resigned as auditor of the Newton Falls Paper Company. Mr. and Mrs. Hubka expect to spend the winter in Florida and Mr. Hubka will go into business there. Formerly with the McGraw-Hill Corporation of New York, Mr. Hubka was appointed auditor of the Newton Falls company about three years ago. He is succeeded as auditor by John Schock, of New York.

Joseph A. Quinlan, traffic manager of the St. Regis Paper Company, appeared before a hearing conducted by Major Dewitt C. Jones in Ogdensburg, asking for an improved harbor at Ogdensburg and Waddington. At the latter port, no im-

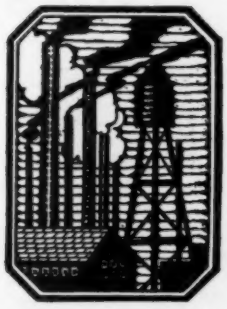
STEEL
for Immediate Shipment from Stock

For Maintenance, Construction and Repairs

Bars	Boiler Tubes
Shapes	Boiler Fittings
Structurals	Corrugated Sheets
Rails	Concrete Reinforcing
Plates	Welding Rods
Sheets	Babbitt Metal
Rivets	Tool Steel
Bolts	Bar Iron
Nails	Refined Iron
Wire	Floor Plates
Chain	Safety Treads
Turnbuckles	Small Tools
Shafting	Machine Tools, etc.

Write for the Ryerson Journal and Stock List —the "Key" to Immediate Steel

JOSEPH T. RYERSON & SON INC.
CHICAGO ST. LOUIS CINCINNATI DETROIT BUFFALO NEW YORK



PAINT PROTECTION ASSURED

Paint in all colors, including white, to meet the most exacting conditions

GARDCO PAINT PRODUCTS CO.
53 West Jackson Boulevard CHICAGO
Warehouse Stocks: Chicago, Buffalo, Providence

New England Distributor
GILBRETH BROWN, INC., 44 Washington St., Providence

"You can say good-bye to rust when you paint with BITUMASTIC"

The Paint Question

Your search for a paint that will stand up under moisture, chemical fumes and heat conditions comes to an end when you begin using BITUMASTIC SOLUTION. It gives enduring protection to metal buildings and roofs, structural steel, tanks, pipes, stacks, boiler fronts and breechings and other steel surfaces. It has a fine glossy finish that lasts. The sooner you start using BITUMASTIC, the sooner your worry over the paint question ceases.

The most convincing argument in favor of the use of BITUMASTIC SOLUTION is the performance of the paint itself. We are willing, therefore, to send a sample can, without charge, to interested executives and engineers.

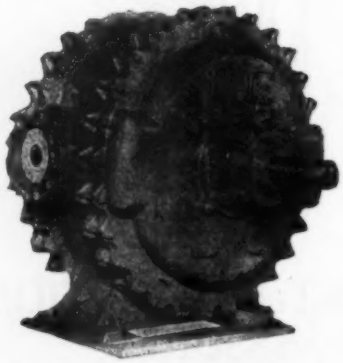
SINCE **BITUMASTIC** 1854

WAILES DOVE-HERMISTON CORPORATION

17 BATTERY PLACE, NEW YORK

322 S. Delaware Ave., Philadelphia — Union Trust Building, Cleveland

Only Hytors have Hytor improvements



Size No. 8 Nash Hytor Vacuum Pump, for suction couch rolls and similar service. At 220 R. P. M., this pump will handle 2,000 cu. ft. of free air per minute and require only 66 H. P. For other sizes and capacities, write our Engineering Department.

Among the many distinctive details of construction of the new type Nash Hytor for suction couch rolls and similar service, the central ring support and the single pump connection appeal strongly to the operating mill engineer.

The central ring support, to which the heads on either side are bolted, gives the pump stability, and assists in keeping the shaft in alignment. When desired, the head can be removed, and the interior of the pump inspected without disturbing the connections or the means of support.

By the use of a single pump inlet, the manifold connection is done away with.

Write for complete details of construction, method of operation, sizes and capacities.

NASH ENGINEERING COMPANY

So. Norwalk — Connecticut

New England Representative
Mr. G. H. Gleason, Nottingham Bldg., Copley Sq., Boston, Mass.

Western Representative
Mr. T. H. Savery, Jr., Room 1524 Republic Bldg., Chicago, Ill.

Nash Hytor

VACUUM PUMPS AND COMPRESSORS

provement has been made since 1881. With mills at Norfolk, Norwood and Raymondville, the St. Regis Paper Company handles through this harbor approximately 70,000 cords of pulp wood each year.

New York City News

October 1, 1925.

Bulkley, Dunton & Co. Absorb Hartig Co.

Bulkley, Dunton & Co., wood pulp importers and agents of 75 Duane street, New York, have taken over the Hartig Pulp Company, of 247 Park avenue, New York, through the acquisition of the entire capital stock of the latter concern. All of the pending contracts of the Hartig Pulp Company will be carried out by Bulkley, Dunton & Co. The acquisition is in connection with a fuller co-operation of Bulkley, Dunton & Co., with Hugo Hartig, of Hamburg, and A. B. Hugo Hartig, of Stockholm, their European connections.

Bulkley, Dunton & Co. will henceforth have the sale of those pulps which were handled by the Hartig Pulp Company in this country, including some well known mill brands which are in high favor with American consumers. The relations of Bulkley, Dunton & Co. with Hugo Hartig and A. B. Hugo Hartig will continue as before, and are now more closely affiliated. Fred Enders is manager of the wood pulp department of Bulkley, Dunton & Co.

Big Contract for Waste Paper

According to an announcement made here a few days ago by James Flett, with offices at 9 South Clinton street, Chicago, Mr. Flett has completed a contract with the Star Company, of New York, whereby he will supervise the sale of all the waste paper, estimated at about 50,000 tons per year, accumulated by newspapers affiliated with the Star Company in various parts of the United States. The Star Company is the operating company which controls all of the so-called Hearst newspapers.

It is understood that Mr. Flett's contract includes all the waste paper produced by the Hearst newspapers in the following cities: New York, Chicago, Rochester, Albany, Washington, Seattle, San Francisco, Los Angeles, Detroit, Milwaukee, San Antonio, Fort Worth, Boston, Syracuse, Atlanta and Baltimore.

News Print Bureau Meeting Oct. 20-21

The fall meeting of the News Print Service Bureau will be held in New York on October 20 and 21. On Tuesday, October 20, the meeting of accountants and engineers to discuss cost and operating problems will be held at the Canadian Club in the Hotel Belmont. The usual Bureau meeting, with reports on conditions in the industry, will be held at the Hotel Commodore on Wednesday, October 21.

Among other features of the program will be an address by an exceptionally well-informed observer on present conditions in the European paper trade.

Announcement has been made that the Kent Paper Co., Inc., of 329 East Twenty-ninth street, New York, has been taken over by new interests. The new officers are Charles H. Wilkinson, president; John G. Voltmann, vice president, and John A. Hopper, secretary and treasurer. Mr. Wilkinson has been identified with the paper trade about five years, formerly with the National City Paper Corporation. Mr. Voltmann has been in the trade eleven years, formerly with the National City Paper Corporation and the Foreign Paper Mills. The Kent Paper Company, Inc., specializes in wedding, bond and greeting card papers, and manufactures envelopes.

Max Maier-Hermann, member of the well-known concern of Marx Maier, rag exporters of Mannheim, Germany, is on a visit to the United States and is making his headquarters at the Hotel Astor, New York. Mr. Maier-Hermann is calling on paper manufacturers with a view of studying their particular requirements in foreign rags so that stock can be packed abroad in accordance with the wants of consumers here.

Announcement is made that sales of the Bastrop Pulp

Progress in Paper Making

WITH progress in American paper making, we are concerned and connected. To commemorate the advances that have been made, the more important annals of the industry will be recalled from month to month in this space.

John Ames Paper Maker and Inventor

John Ames, of Springfield, Mass., was the most progressive paper maker of his day. He constructed the first cylinder paper machine set up in New England. He introduced wire covered cylinders for carrying off dirt from the rags in the engines in 1831, and obtained a patent for an improvement in the mode of sizing paper in 1832. In 1834, he invented an apparatus for cutting the paper web into sheets of any required length as it came from the dryers. This is but a partial list of his activities.

Established 1842

Cheney Bigelow Wire Works

Experienced and Progressive

Fourdrinier and Cylinder Wires
Dandy Rolls and Cylinder Moulds
made and recovered

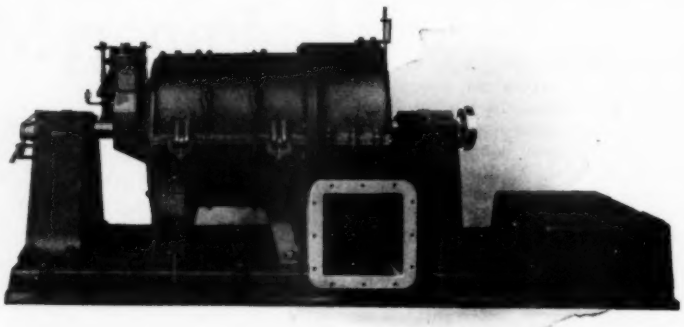
SPRINGFIELD, MASSACHUSETTS

Paid for out of savings in sixteen months

Powdered Fuel Equipment

Engines

Boilers



Fabricated Steel Work

Grey Iron Castings

A PROMINENT paper manufacturer reports that after sixteen months operation the savings made by installing an

Erie City Unit System of Pulverized Fuel

paid for installing a new 512 h. p. boiler, pulverized fuel fired, and a complete new coal handling and storage system. (Name of company on application.)

Write for complete information and test reports

ERIE CITY IRON WORKS *(Established in 1840)* **Erie, Penna.**

GRANT GEAR WORKS

Estimates and gear advice promptly and cheerfully given

Send for Our Catalog of Stock Gears

Office and Works

Second & B Sts., Boston, Mass.

MAGIC BOILER PRESERVATIVE

"The Pioneer Boiler Treatment"

Positively removes and prevents scale, stops minor leaks, pitting and corrosion

GARRATT-CALLAHAN CO.

27 South Clinton Street, Chicago

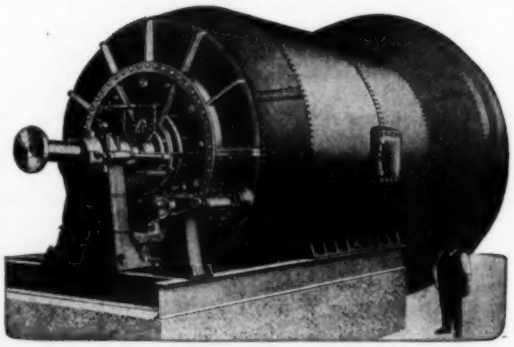
148-156 Spear St. San Francisco

MAGIC ESTABLISHED 1904

1328 Broadway New York City

LEFFEL

TURBINE WATER WHEELS



HIGH SPEEDS, HIGH POWERS, HIGH EFFICIENCIES

All of our turbines are designed and built to suit location and requirements, by engineers and experts who have had years of experience in this particular line of work. Turbines fully guaranteed.

Bulletins Forwarded Upon Request

The JAMES LEFFEL & CO., Springfield, Ohio

BRANCH OFFICES:

NEW YORK, N. Y. ..... 39 Cortlandt St.
BOSTON, MASS. ..... 80 Boylston St.
ATLANTA, GA. ..... Fourth National Bank Building
MINNEAPOLIS, MINN. ..... Plymouth Building
LANCASTER, PA. ..... Woolworth Building
PETERBOROUGH, ONT., CANADA .... William Hamilton Co., Ltd.

and Paper Company, of Bastrop, La., now a division of the International Paper Company, will henceforth be handled from the executive offices at 100 East Forty-second street, New York. J. L. Fearing is sales manager and R. C. Tilden assistant sales manager. The company will continue to feature the "Gator Hide" kraft, a high grade sulphate paper. All inquiries should be sent to the New York office.

Beebe Co. Being Liquidated

The corporation of Ira L. Beebe & Co., Inc., wood pulp importers and agents of 17 Battery Place, New York, is being liquidated and the business will be continued under the firm name of Ira L. Beebe & Co., by Ira L. Beebe, Jr., and his son, Roderick Beebe.

Ira L. Beebe & Co. was established in 1851, and for years has been prominent in the pulp trade. The corporation was formed about a year ago. The company is back at its former address in the Vanderbilt Building, 132 Nassau street, New York. Edward W. Bedford, formerly with Ira L. Beebe & Co., Inc., is now located in the World Building, 63 Park Row, New York, where he is doing business along the same lines as prior to the time he joined the Beebe corporation.

Katzenstein & Keene, Inc., importers of papermaking rags, have moved their offices from 46 Harrison street, Hoboken, N. J., to 40 Rector street, New York.

The John F. Sarle Company, Inc., of which K. S. Warner is president, among the largest and oldest established paper jobbing concerns in the metropolitan district, held "open house" on September 9 and 10, in its new building at 50 Hudson street, New York, into which it moved recently. Invitations were extended to the trade to visit the new building and quite a few responded and looked over the fine, up-to-the-minute quarters of the Sarle Company.

Charles W. Kaseler, who for 29 years was with the New York & Pennsylvania Company, is now a member of the staff of Charles F. Hubbs & Co., jobbers, of Lafayette and Fourth streets, New York. Mr. Kaseler not only has a long record in the trade behind him, but also a very admirable one.

Members of the New York Division of the Salesmen's Association of the Paper Industry took an afternoon off on August 25 and motored out to the White Beeches Golf Club near Newark, N. J., and put in a round of golf competing in the finals for the Outterson Cup. They were guests at the club of R. C. Tilden, vice president of the New York Division.

Ohio News

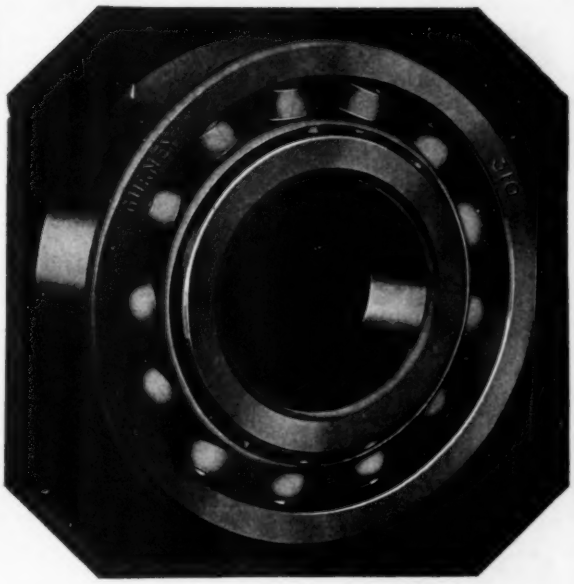
October 1, 1925.

Progress at Franklin Board Mill

Interesting work is going on at the Franklin Paper and Board Company, Franklin, Ohio, under the direction of Mr. L. T. Murphy, the superintendent. This work is calculated to maintain or raise the present high quality of the production and finally to increase the output of the mill. Mr. Murphy, who is one of the best known board mill men in the United States, has only been in charge of the mill a few months, but already definite progress has been made in the directions outlined by him.

Board mill men are coming from far and wide to see the operation of the Shartle breaker beater with Mr. Murphy's own junk sump attachment. The old papers which form the basis for the raw material in the board contain, as all board mill men know, everything from tin cans to boulders and steam rollers. The usual practice is to let this accumulation of junk gather on the bottom of the breaker beater until it is cleaned out at the week-end. Mr. Murphy's device is a marvel of efficiency and simplicity and is taking the junk out of the beater just as fast as it goes in.

This junk sump or catcher is only the beginning of Mr. Murphy's plans for his mill. Workmen are already engaged in raising the roof about eighteen inches to permit the installation of the Black and Clawson system of stacked dryers. The winter drive has already been redesigned by Mr. Murphy personally to give stability and prevent loss in poor



Longer Life

By eliminating vibration, chatter and play, the life of any machine can be greatly increased.

Gurney Ball Bearings, because of accurately ground raceways, and because there is no filling slot, provide rotating elements an absolutely smooth path. They also contain more and larger balls than any other type of bearing.

These are only a few of the reasons for longer life of Gurney Ball Bearing equipped machinery.

Gurney Engineers will gladly assist you to build machines of longer life.

Marlin-Rockwell Corp.
Jamestown, N. Y.

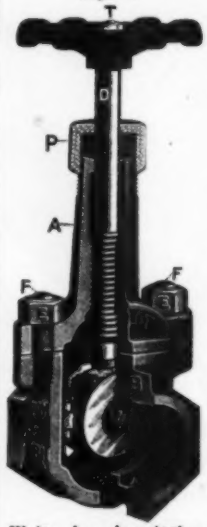
18319

GURNEY BALL BEARINGS

POWELL VALVES

"Pilot" Gate Valves

Fig. 460



All iron or iron body with steam bronze trimmings. Simple in construction.

Working Pressure up to 125 lbs.

Economical and Reliable

Avoid disappointment in Valve Service by specifying POWELL VALVES

The Wm. Powell Co.
214 Draper St.
Cincinnati, Ohio

Write for descriptive Circular

Protect Yourself—DEMAND

ALBANY GREASE

The 100% Lubricant —Never Drips

Trade Mark

Won't Throw Off

The life of your machinery depends upon the quality of lubricant you use—not the quantity. Use Albany Grease on your shafting, conveyors, grinders, etc. Avoid the cheap imitations that are sold just on price.

The Albany Grease Trade Mark is on every can and barrel—look for it for your protection

Your dealer can supply you. If not, write us.

ADAM COOK'S SONS, Inc.
714-716 Washington St.
NEW YORK

Riley Stoker Corporation

RILEY STOKER CORPORATION

"RILEY" Underfeed Stokers
"JONES" Underfeed Stokers
"HARRINGTON" Traveling Grate Stokers
"MURPHY" Automatic Furnaces
Pulverized Coal Installations

9 Neponset Street, WORCESTER, MASS., U. S. A.

A Type for Every STOKER Need

Riley Stoker Corporation

TABER-PUMPS

CENTRIFUGAL & ROTARY

These sturdy, bronze fitted, double suction pumps are particularly suited for all classes of water service. Durable and efficient. Send for Bulletin No. 30.

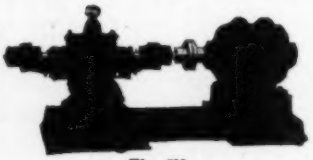


Fig. 518

TABER PUMP CO. Buffalo, N. Y.

PUMPS

INDUSTRIAL—AGRICULTURAL—MUNICIPAL—RESIDENTIAL

A Type for Every Service

THE GOULDS MANUFACTURING COMPANY
SENECA FALLS, N. Y.

GOULDS

ECONOMIZERS

Reduce fuel costs by making use of waste exhaust gases to preheat the boiler feed. Patented construction proven by 20 years of service.

FOSTER

SUPERHEATERS

Improve engine, turbine and boiler economy by enabling a given amount of steam to do more work. Over 10,000 installations in stationary power plants.

POWER SPECIALTY COMPANY, 111 BROADWAY, NEW YORK

Boston Pittsburgh Detroit Kansas City Dallas Chicago Boulder Los Angeles San Francisco London, Eng.

winding. The mill ventilating system is being redesigned to give greater efficiency in drying. Mr. Murphy is insistent on good housekeeping and those who visit his mill twelve months from now will be impressed with the progress that has been made. A trip to see that junk catcher is worth any man's while right now.

Pacific Coast News

October 1, 1925.

New Paper Mill for Bellingham, Wash.

With a $2,000 over-subscription of stock and the site chosen, prospects for a paper mill to be called the Pacific Coast Paper Mill, located in Bellingham, Wash., reached materialization recently following a meeting of business and professional men.

The new mill will have the backing of the Westminster Paper Mills, Ltd., interests of New Westminster, B. C., and the Bellingham Bay Improvement Company, also P. E. Healy, executive secretary of the Chamber of Commerce, Bellingham.

Articles of incorporation have been filed, the capital stock being $75,500 and the incorporators are J. J. Herb, of New Westminster, B. C., Walter B. Whitcomb, George B. Nolte and George H. Bacon, all of Bellingham.

J. J. Herb is president, A. D. Bowen, vice-president, Elmer Herb, secretary. All of these men are connected with the Westminster Paper Mill.

The company has called for bids for the factory building, which will be 76 feet by 120 feet and two stories high. Actual construction of the mill is being planned immediately. Machines have already been ordered, and it is thought that the mill will be operating by the end of the year.

The first unit will employ forty men, but eventually, the mill will employ between two hundred and three hundred men.

Straw Paper Mill About Ready to Start

The Pacific Straw Paper and Board Company, Longview, Washington, will begin operations within six weeks, Richard Clayton, manager, announces. Six electric motors to operate machinery are being installed.

The capacity of the plant will be 30 tons daily and employment will be given fifty men.

Plant and investment represent an investment of $200,000, according to officials of the company. William Battles, of Franklin, Ohio, has arrived to take over the superintendency of the plant.

Douglas Fir for Paper Pulp

Tests conducted for the past six months by the Oregon Pulp and Paper Company, Salem, Oregon, have resulted in a successful process for utilizing red and Douglas fir wood in making high grade paper on a commercial scale.

The resinous wood, formerly regarded as unfit for paper, is treated by the sulphite process as easily and as cheaply as white fir and hemlock. Wood needed by the mill is now available to keep the plant running indefinitely after other woods are exhausted. The new process was developed by C. S. Beyerl, manager, and J. B. Wilt, sulphite superintendent.

Curt Wasserman, son of John Wasserman, paper king of Argentina, has gone to work at the Powell River Company, Ltd., mill, Power River, B. C., where he intends to stay for a year. He will start as a laborer with the intention of learning every angle of the paper business.

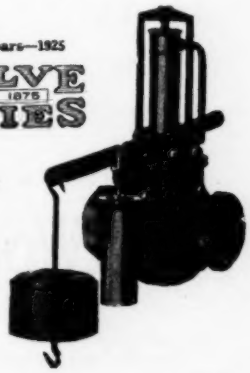
Morris W. Hedden, formerly sulphite superintendent at the West Lynn plant of the Crown-Willamette Co., in Oregon, has recently made a connection with the E. B. Eddy Co., Ltd., of Hull, Que., which operates a sulphite mill there in addition to an extensive groundwood mill.

The Niagara mill of Kimberly-Clark Co. has promoted Nels Rassmussen, tour boss at Niagara Falls mill, to superintendency of the Wisconsin mill. He is a native of Neenah and started with the company in 1913. The mill also has employed Gaylord R. Stuelke as physical director. Last year he was captain and all-state guard of Coe College basketball team, Cedar Rapids, Iowa, which won 11 straight games.

THERE are several good makes of pressure regulators. If the make you are using is giving you perfect satisfaction, keep on using it. If not, specify a Davis on your next job.

G. M. DAVIS REGULATOR CO.
414 Milwaukee Ave.,
Chicago, Ill.

1875—Valve makers for fifty years—1925
DAVIS VALVE SPECIALTIES
STEAM SAVERS SINCE 1875



Davis Pressure Regulator

Piston type with counterweighted lever control. Pressure is balanced by weight. Action is visible, and may be hand-tested by moving lever. No springs or toggles—no diaphragm to give way.

PI-16B-27

Check Valves that check trouble

Sectional view, Fig. 117, screwed, Jenkins Standard Bronze Horizontal Check Valve.

Fig. 352 Screwed, Jenkins Standard Bronze Swing Check Valve.

Install Jenkins Check Valves; their action is prompt and reliable.

The contact at the seat is leak-proof, each valve being fitted with a Jenkins Renewable Disc. In addition to insuring perfect contact, a Jenkins Rubber Composition Disc takes up the wear of frequent opening and closing.

Jenkins Check Valves are made in bronze and in iron, in standard, and extra heavy patterns.

JENKINS BROS.

80 White St.....New York, N. Y.
524 Atlantic Ave.....Boston, Mass.
133 No. Seventh St.....Philadelphia, Pa.
646 Washington Blvd.....Chicago, Ill.

JENKINS BROS., Limited
Montreal, Canada London, England

Always marked with the "Diamond"
Jenkins Valves
SINCE 1864

The "U. G." Automatic BELT CONTACTOR

Saves—

BELTS

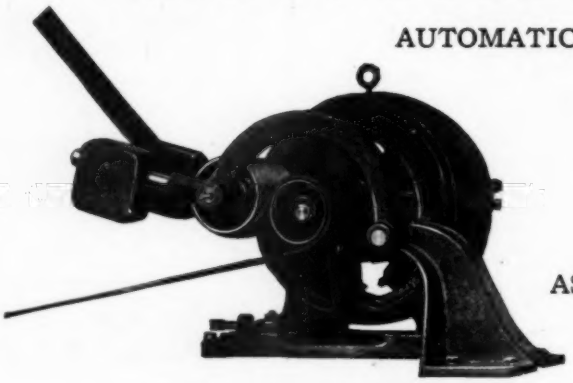
BEARINGS

FLOOR SPACE

MOTORS

POWER

UPKEEP



AUTOMATICALLY WRAPS BELT AROUND PULLEYS INCREASING ARC OF CONTACT AS LOAD INCREASES

SEND FOR BULLETIN NO. 268

T. B. Wood's Sons Co., Chambersburg, Pa.

Makers of a general line of Power Transmitting Machinery including Motor Pulleys, Flexible Couplings and Speed Reducers

New England Branch: Cambridge, Mass. *Dealers in principal cities* Southern Office: Greenville, S. C.

WEBSTER QUALITY

Steel and Malleable Chains for Pulp and Paper Mills

WHATEVER the type of chain that best meets your own peculiar requirements, Webster has it, and when you have made sure that the chains you employ in your mechanical handling devices bear the —Z— trade-mark of the Webster works, you have gone a long way toward profitable operation in your plant.

Webster chains for mechanical handling devices in pulp and paper mills consists of pintle chain, detachable chain, combination steel and malleable iron chain, riveted and detachable drag chains, and steel pushed roller drive chain.

Our 96-page catalog No. 46, covering our complete line of chains and sprockets, will be forwarded to you on request.

THE WEBSTER MFG. CO.

4500-4560 Cortland Street
CHICAGO

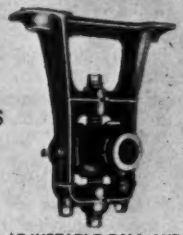
VALLEIRON

ADJUSTABLE PILLOW BLOCK

"HYATT" ROLLER BEARING APPLIANCES

ADJUSTABLE POST HANGER

ALL SIZES



ALL KINDS

ADJUSTABLE BALL AND SOCKET HANGER

Representatives will find it distinctly to their advantage to procure *finished Frame* requirements from authorized manufacturers

VALLEY IRON WORKS

ENGINEERS MACHINISTS FOUNDERS

WILLIAMSPORT, PA., U. S. A.

BALL AND SOCKET PILLOW BLOCK WITH WEDGE ADJUSTABLE SOLE PLATE

BALL AND SOCKET PILLOW BLOCK

VALLEIRON

British Correspondence

General Report of British Paper Industry

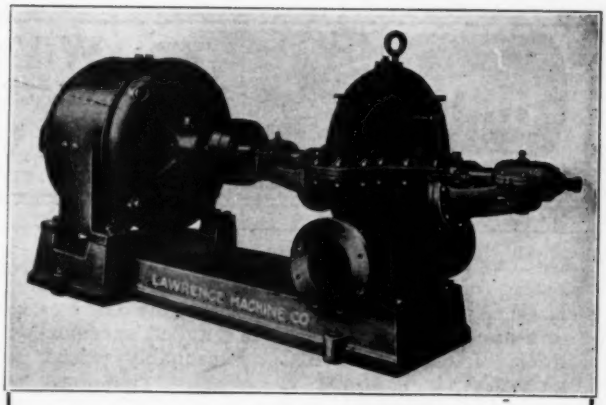
The general depression in British trade naturally reacts to some considerable extent on the state of the paper industry. Trade generally is extremely poor, and it is inevitable that the main industries determine the conditions in the paper trade. Unless, therefore, there is very considerable improvement in British industry and commerce as a whole, it cannot be expected that any better prospects will be reported for the paper making and selling industries.

There is still a lack of sufficient demand for paper to keep all classes of machinery in motion for a normal number of hours each week, and for many months there has been a large number of idle machines in the various paper mills throughout the country. British mills can still, however, compare favorably with the Continental mills from the point of view of speedy delivery. Paper makers in this country being able to make and despatch several tons in less than a week, whereas a waiting period of two or three months would be necessary with foreign firms. Again British firms offer good credit terms while foreign makers are generally sticklers for prompt payment. The trouble lies in the fact that many merchants in this country do not fully realize these facts; but they are generally more keen on price than anything else. The main fault is that there is little or no co-operation between the making and distributing sides of the industry. The method of selling paper in this country is without doubt very satisfactory. It is a system, or rather a lack of system, which produces price-cutting tactics and other unsatisfactory developments. For example, the manufacturer can sell to the paper user or consumer at the same prices that he would sell to the merchant, and in some cases manufacturers compete with the merchants by importing from abroad various types of paper which they do not make themselves, for sale direct to the consumer.

The comparative cheapness of foreign paper, which is due to the payment of lower wages, and the working of longer hours on the Continent, is naturally a re-acting influence against the satisfactory progress of the British paper industry. A writer in The Times Trade Supplement recently pointed out that the American paper trade could not have been organized on such a sound and profitable basis had it not enjoyed the safe protection of a tariff wall. He goes on to say that the British paper buyer has the choice of foreign paper at a slightly cheaper price than paper made in his own country, at least as regards a few kinds. But we are faced with unemployment and decline in important sections of our industry; so in the end what is saved in the purchase of material is spent in taxation. Moreover, it is not certain that British paper prices are bound to remain on their present level, because the two factors responsible for the high costs of papermaking are prime expenses, mainly arising from taxation, and diminished output.

As far as our exports go, our shipments to foreign countries are showing marked signs of decreasing; but to the overseas Dominions our exports are still increasing. Australia is still our best customer; but we are in danger of losing a great part of her trade in paper, owing to the fact that we do not fully reciprocate in the way of prefential tariff treatment. Much controversy is raging at the present time on the question of Imperial preference, it being contended that by giving our Colonies and Dominions the advantages of this treatment, we should pave the way to a vastly increased amount of overseas trade.

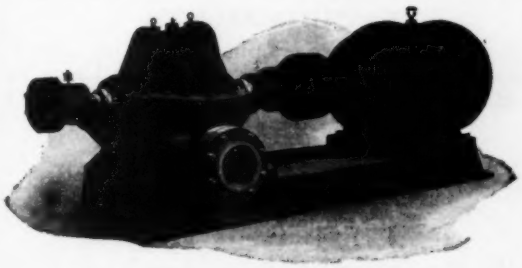
Newsprint mills are at the present time well supplied with orders, mainly from Australia; but there are signs that the Canadian mills are making plans to divert a certain amount of this trade in their own direction. Reports are to hand of new mills in Canada whose particular province will be to supply American publishers with a part of their products, sending any surplus to Australia. Although British mills are well equipped and organized, they are handicapped by freightage charges, and the necessity for sea routes; being totally devoid of the natural advantages fortunately possessed by the three Continental papermaking countries—Finland, Norway, and Sweden; and equally blessed Canada and the United States of America.



LAWRENCE Centrifugal turbine pump, single stage, horizontally split casing, double suction enclosed impeller, high pressure pumps for water supply service, designed and built in all sizes to meet all conditions. Direct connected to electric motors, steam turbines, gasoline engines, etc. Material and workmanship of the highest class. Please submit to our engineering department your specifications. Prompt service rendered at all times.

LAWRENCE MACHINE COMPANY
LAWRENCE, MASS.
Manufacturer of "Lawrence" Pump, Centrifugal Pumping Machinery, Vertical Steam Engines, Contractors for Special Machinery

Aurora Centrifugal Pumps



Type OMD

Aurora pumps are made in many types, to meet all conditions found in the paper mill field.

We specialize in horizontally and vertically split open and inclosed impeller, single and multi-stage and deep well turbine centrifugal pumps as well as deep well reciprocating pumps.

A card from you stating your conditions places our engineers at your service and results in a saving to you.

AURORA PUMP & MFG. CO.
Home Office and Factories, Aurora, Ill., U. S. A.

PRESSURE PIPE THAT NEVER BURSTS
Built in sizes 1 inch to 48 inches

WYCKOFF WOOD PIPE

The Paper Industry is successfully using thousands of feet of this Pipe and they find it to be the best conveyance for Paper Stock and Acids that can be obtained.

Write today for catalog and prices

A. WYCKOFF & SON COMPANY

1855 Elmira, N. Y., U. S. A. 1925

2—Complete, Modern, Hydro-Electric Units, consisting of S. Morgan Smith Wheels and 150 K. V. A. Electric Machinery Company Generators and Exciters. Write for detailed specifications. Inspection invited. Reasonably priced.
REYNOLDS WIRE CO. Dixon, Ill.

FOR SALE: Slightly Used Beaters

1—2000 Lb. Allen Breaker Beater (nearly new).
Will sell the above "as is" or factory rebuilt.

ALSO

3— 800 Lb. Beating Engines, rebuilt with new wooden tubs.

THE NOBLE & WOOD MACHINE CO., Hoosick Falls, N. Y.

WANTED—Night Superintendent—50-ton Sulphite Mill, Northern Quebec. Fully qualified man wanted for 15th October-1st November, to take charge at night. State experience, age, salary wanted and full particulars in first letter. Reply to Box No. 79, The Paper Industry.

LET US QUOTE ON YOUR

PULPWOOD

REQUIREMENTS

Finest quality Spruce, Poplar, Balsam or mixed. Sap-peeled, Rossed or with Bark on. Large or small quantities. Prompt shipment or contract for 1926 delivery.

The Erickson Tie & Lumber Co.
Sudbury, Ont., Canada

U. S. Representatives

E. J. BERGER & CO.
1400 Broadway New York City

Paper Mill Machinery

SUPER CALENDERS

Two Norwood 54" with cotton rolls
Three Holyoke 66" with paper rolls
One Holyoke 45" with paper rolls

REAM CUTTERS

One 48" Acme
One 44" Seybo'd Twentieth Century
One 44" Seybold Holyoke
One 38" Seybold Twentieth Century

WINDER & SLITTERS

One 120" Warren two drum
Two four drum Moore & White
One 103" Beloit two drum
One 72" Moore & White four drum
One 72" Langston two drum
One 60" Kidder two drum
One 28" Kidder

SHEET CUTTERS

One 84" Moore & White
Two 70" Moore & White
Two 60" Hamblet
Five 56" Hamblet
One 54" Moore & White
One 48" Hamblet

LAYBOYS

One 102" Erie
Four 58" Erie

For sale by

FRANK H. DAVIS CO.
175 Richdale Ave. Cambridge, Mass.

Steel Plate Construction

Steel Storage Tanks, Blast Furnaces, Gas Holders
Steel River Barges and Plate Work of all Kinds
Steel Transmission Towers

RITER-CONLEY COMPANY
General Offices, Pittsburgh, Pa.

Technical Association Papers, Series VIII (1925)

In paper, 248 pages. $3 per copy; $1.50 to members of TAPPI

CHEMICAL PULP
Chemistry in the Soda Pulp Process
Economy of Lime Reburning
Evaporator Test Code for Soda Mills
Preliminary Impregnation of Wood
Strength Test for Chemical Pulp
Sulphite Waste Liquor as Fuel
Use of Decayed Wood for Bleached Chemical Pulp

MECHANICAL OPERATION
Alexander Electric Paper Drier
Burning of Wood Refuse
Moisture Meter and Its Use in Water Removal
Ruths' Steam Accumulator
Steam Prime Movers for Paper Mills
Ventilation of Paper Machine Rooms

MECHANICAL PULP
Norton's Segmental Pulpstone
Refiners for Groundwood Tailings

PAPER TESTING
Bureau of Standards and the Weller Brittleness Test
Extractor and Cleaner for Carbon Paper
Pulp Weight Factors for Microscopical Analysis
Relation of Paper Furnish to Paper Tests
Stains for Microscopical Analysis
Study of the Mullen Tester
Test for the Liquid Permeability of Paper
Tests at Various Relative Humidities
Use of the Glarimeter for Paper Finish

WASTE
Burning of Wood Refuse
Economy of Lime Reburning
Uses of Carbon Recovered from Black Ash
White Water and Stream Pollution
White Water Utilization Code

MISCELLANEOUS
Baryta Paper
Bibliography of Paper Making for 1924
Effect of Acetic Acid on Animal Glue
Notes on China Clay
Reference Library
Standard Method for Testing Rags
Testing Aniline Dyes
Tyndick's Rosin Size Color Test

Write to THE PAPER INDUSTRY, 356 Monadnock Bldg., Chicago, Ill.

There are hopes of developments in the esparto mills. The Harrison group has recently acquired two more mills, bringing the total number of mills under their control up to eight. The mills taken over were those of Messrs. H. Bruce and Sons, Limited, and Messrs. T. Chalmers and Sons, Ltd. Those already controlled by this group are the Iveresk, Carrongrove, Watsons of Bullionfield, Caldwells, Annandales, and St. Cuthbert's Mills. Considerable economies are expected to be the result of these amalgamations, and these developments are likely to have a big effect on the future of Scottish esparto paper manufacture.

New Catalogs, Booklets, Etc.

Freeman-Riff Co., Terre Haute, Ind.—The handling, storing and weighing of coal at the new plant of Purdue University is pictured in a very unique way by the display of a blue print reproduction and many photographs in this circular. The entire university is pictured along with the heating plant and the details of its equipment.

Lobdell Car Wheel Co., Wilmington, Del.—"The Grinding Care and Upkeep of Paper Mill Rolls" is the title of this 34-page book. General information on roll grinding and measurement, suggestions for care and conditioning, tables and formulae are included and many detailed drawings serve to illustrate these features.

Stephens-Adamson Mfg. Co., Aurora, Ill.—The forepart of the September "Labor Saver" No. 146, is devoted to the Champion Coated Paper Company. Wood cuts furnish illustrations which visualize the immensity of the operations in pulp and paper manufacture in clever graphic form, and photographs display the details of the handling of materials. This is followed by illustrations and descriptions of installations in other industries.

American Hoist & Derrick Co., St. Paul.—Electric rivet heaters are featured in this 16-page booklet. The superheating of different parts of rivets is clearly illustrated and the process is carefully explained. Other shop appliances described and illustrated are: ring heaters, bar heaters, magnetic chucks, oil hoists, and magnetic tool supports.

Cutler-Hammer Mfg. Co., Milwaukee.—"C-H" Magnetic Clutches" is the title and substance of this attractive booklet. Photographs of installations in paper mills, cement mills and other industries, show the many uses of these clutches on synchronous motor drives. Detailed drawings and working data are used with the descriptions of the features of this clutch.

FOR SALE—American Barking Drum. Brand New. Latest U. Bar Type and Drive with Steel Supports and Motor. Technical Economist Corp., 40 Rector St., New York, N. Y.

For Sale

One HY-VAC SLUICE manufactured by the Holyoke Vacuum Sluice Company, Springfield, Mass.—description as follows: Center to center of bearings—112" but can be adjusted to 122"; $\frac{3}{16}$" slot; length of slot—106" maximum, 82" minimum; brass body and 1½" pipe connection. We also have extra extension pieces so that it will take up to 2½" pipe. For further particulars apply to John A. Manning Paper Company, Inc., Troy, New York.

American Made Cotton Transmission Rope of the Highest Quality

For Main Engine and Fourdrinier Drives

Light, Flexible, Durable, Lambeth, the "Natural Transmission," delivers continuous power after years of use

ALSO, EGYPTIAN ROPE FOR SHEEHAN CARRIERS

Lambeth Rope Corporation

Makers of Rope since 1891

New Bedford Massachusetts

Morey Paper Mill Supply Co., 99 Chauncy Street, Boston, Mass., Distributors to the Paper Industry

LOCKPORT Felts

EXCLUSIVE MAKERS OF

Paper Makers' Felts

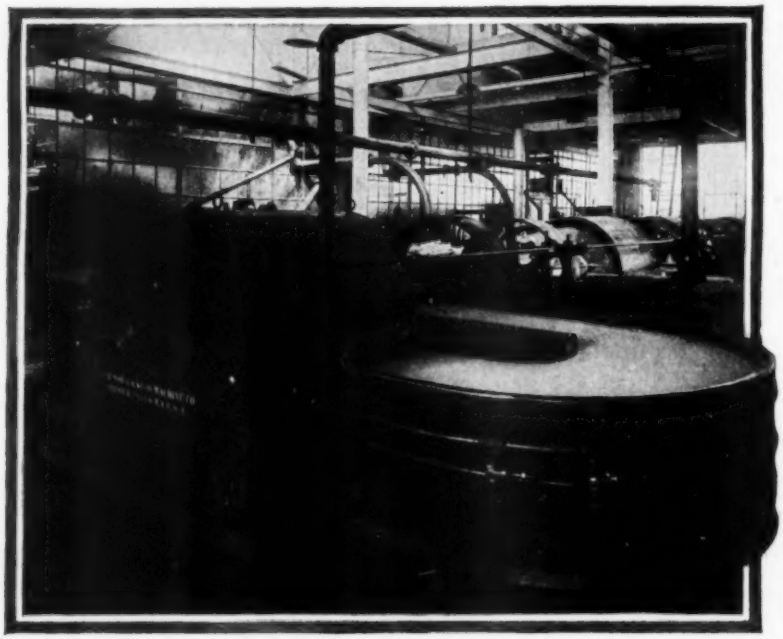
Have You Run Them?
If Not, Why Not?

Are You Interested in Accurate Running Felts?

Give Us a Trial
Get Authentic Information
Ask the Men Who Run Them

Yours for service

LOCKPORT FELT CO., Newfane, N. Y.



A lubricant for Beater bearings

—*that gives the "film of protection" and reduces operating temperatures*

THERE are many parts of paper mill machinery that are difficult to lubricate correctly—and the beater bearing is one of them. This is because such tremendous pressures are placed on these bearings. Extremely high operating temperatures result.

But according to the enthusiastic testimonials of many of our satisfied customers, we have considerably less trouble lubricating beater bearings correctly than our competitors have. And we have evidence in our files showing that beater bearing temperatures have been reduced from 250°F. to 120°F. through the use of Tycol Medium Fibre Grease—the lubricant recommended by our Engineering Bureau for beater bearings, both open and enclosed.

One of our Staff Engineers will be glad to call and present this evidence to you, and tell you more about the Tide Water Power Group.

If your beater bearings are of the open type, he has a practical suggestion for lubricating them that will make his visit doubly worth your while.

The FILM of PROTECTION

—for paper mill machinery

In their application to each phase of paper mill lubrication, the lubricants comprising the Tide Water Power Group form the "film of protection," *thin as tissue, smooth as silk, tough as steel.* The application of the Tide Water Power Group to your machinery will give you economical lubrication—maximum power, uninterrupted operation and increased production.

The Tide Water Power Group

TYCOL GEAR COMPOUND
TYCOL LUBRICANT No. 1
TYCOL YARN GREASE
TYCOL H. T. GREASE
TYCOL MEDIUM FIBRE GREASE
TYCOL GEAR COATING SOFT
GRENOL STEAM CYLINDER OILS
DYNOL ENGINE AND TURBINE OILS
TYCOL LUBRICATING GREASES
CLAROL MACHINERY OILS

TIDE WATER LUBRICANTS

TIDE WATER OIL SALES CORPORATION

ELEVEN BROADWAY NEW YORK

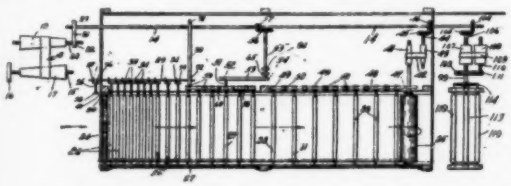
Technical Developments in the Paper Industry

Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Paper Drying Apparatus

THE paper drying apparatus which is shown in the accompanying illustration consists of a casing, in which the paper that is to be dried is fed in a continuous wet web. This is accomplished by conveying means, which are arranged in



such a fashion that the speed at which the paper is made to leave the drying apparatus is sufficiently lower than the speed of feeding the paper into the casing so as to allow for the shrinkage of the paper during the drying process. This has the effect of relieving any tension that may occur in the paper web during the drying operation and which might tend to tear the paper.

The means for supporting and carrying the paper web through the dryer consists of a number of rolls in a superimposed tier on which the web rests.

For further details see United States Patent, No. 1,550,695.

Sulphite from Different Parts of the Tree

A VERY interesting investigation has been made on the quantity and quality of sulphite pulp that may be obtained from the different parts of the spruce tree and the results of these experiments have been published in an article, in Zellstoff und Papier, 1925, volume 8, pages 81-3.

In these tests, small samples of sulphite pulp were prepared from both moist and air-dried wood which were taken from the top and the middle portion of the stem, and also from the branches of the spruce tree. Thirty grams of the wood were digested in sealed tubes and the same of cellulose were then made into paper after 2.5 grams of the pulp were beaten in a Lampen ball mill.

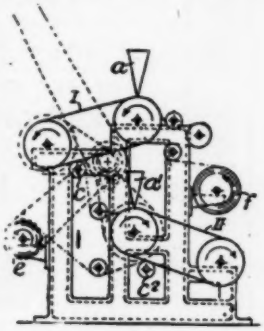
It was found that pulps of the highest tensile strength were obtained with high proportions of lime in the liquor and moderate percentages of sulphur dioxide. For example, the best results were given by a liquor which contained 1.01 grams of calcium oxide, 3.97 grams of total sulphur dioxide and 1.67 grams of free sulphurous acid per hundred cubic centimeters.

A greater reduction of tensile strength was produced by lowering the quantity of the lime than by increasing the concentration of the sulphur dioxide. The tensile properties of the pulps were practically the same from moist wood as from air-dried wood, but air-dried wood gave from one to one and one-half per cent lower yields than the moist wood, calculated on the dry weights.

On the other hand, the pulp that was made from the moist wood was richer in lignin and more difficult to bleach. Wood from the middle portion of the stem gave about one per cent higher wood yield than wood from the top of the tree, but the strength of the paper that was made from these pulps was substantially the same. The average tensile elongation of the paper that was made from the wood of the upper portion of the stem was slightly better than that of the middle portion. The wood of the branches gave about ten per cent lower yields than that from the stem under corresponding conditions of digestion. This pulp was considerably weaker than the fiber from the stem, particularly as regards resistance to folding, the paper only having one tenth of the normal resistance. This peculiarity might, however, be due to the use of the same digestion conditions for the branches as for the stem, and the quality and yield could be considerably improved by suitably curtailing the time of digestion for the more tender wood.

Coating Paper

PAPER for wrapping chocolate candy, etc., is coated on both sides with a layer of colloid, celluloid or the like in which metal powder has been imbedded. The apparatus in which this is accomplished is seen in the accompanying illustration. The paper as it travels from a roll (f) to a roll (e) is guided over supporting bands or rollers (I), (II), coating material being delivered to one side of the paper from a hopper (a) and to the other side from a hopper (a^1). The rollers supporting the bands (I), (II), may be heated in order to accelerate the hardening of the coating. Rollers (c), (c^2), co-operate with the bands (I), (II), as glazing rollers. The World's Paper Trade Review, 1925, 494.



Fine Grade of Sulphite Pulp

A NEW process for the manufacture of a particularly high grade of pure sulphite pulp is patented in German Patent No. 411,304.

This grade of sulphite will meet the highest physical and chemical requirements. The starting material in the process is a light colored digested sulphite pulp, and this is then subjected to a second and a third digestion with a liquor containing either calcium or magnesium bisulphite. This treatment results in the removal of the last traces of incrustating materials that were originally present in the wood. The new process can be carried out in one and the same digester, but under certain conditions it may be more advisable to use two digesters, the second being a rotary digester which is provided with an internal acid-resisting lining. The grade of sulphite pulp that is obtained in this fashion is very reactive from a chemical standpoint.

The operations are carried out as follows. The wood chips are filled into the digester and a calcium or magnesium bisulphite liquor is employed which contains at least four per cent of total sulphurous acid and from 0.8 to one per cent of CaO or MgO. The first digestion may be carried out either by the Mitscherlich or Ritter-Kellner process under the usual conditions. When indirect heating is employed, the pressure is maintained at four atmospheres and the temperature at approximately 135 degrees C., while when direct heating with steam is employed, the pressure is maintained at six atmospheres and the temperature approximately at 155 degrees C. In the Ritter-Kellner process, the digestion liquor contains at the minimum 0.1 per cent of free sulphur dioxide. The liquor is then drawn off and the pulp is washed.

Then the digester is filled again with fresh liquor of the same composition and the wood is digested a second time. Because of the fact that the liquor has undergone dilution with the water that remains behind in the stock after it is washed, it is possible to carry out the second digestion at a

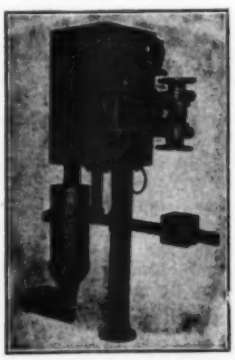
PERKINS GRANITE PRESS ROLLS

Drier sheets
Fewer breaks
Less regrinding
No sticking of paper
A better finish to the paper
Surface remains true much longer
Your Paper Machines are given greater speed

Write us *Today*
for full information and
Our Dimension Card

DEPT. M, B. F. PERKINS & SON, Inc., Holyoke, Mass.

PERKINS HOLYOKE



Don't WORRY Over Weights!

WRITE to TRIMBEY

Use the TRIMBEY AUTOMATIC CONSISTENCY REGULATOR

More than 400 in use.

"Made in Canada?" "Yes!"

Agencies in Principal European Countries.

TRIMBEY MACHINE WORKS
Glens Falls, N. Y.

1864 1925

"Excelsior" Felts

For EVERY GRADE of PULP & PAPER

We continue to maintain at the top the quality of Excelsior Felts, as we have done since we, as pioneers, made *the first endless paper machine felts manufactured in America.*

Seamless felts for fast running
Satin Style felts for finish.
Special felts to meet every condition.
Send us your felt problems.

KNOX WOOLEN COMPANY
CAMDEN, MAINE

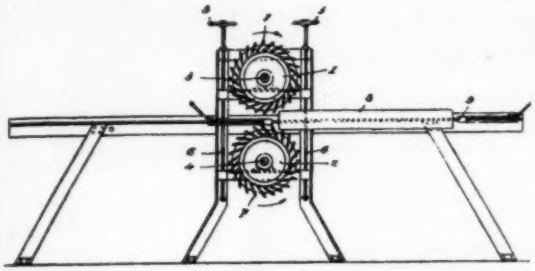
Sold by
BULKLEY, DUNTON & COMPANY
75-77 Duane Street, N. Y
and direct

greater speed than the first. It is essential, however, that the maximum temperature allowable is attained during the digestion of the pulp, and that the digestion liquor, when it is removed from the cooker, contains at least 0.1 or 0.3 per cent of free sulphurous acid.

Separating Wood into Fibers

IN GERMAN Patent, No. 411,303, there is patented an apparatus which is used for the purpose of separating wood into fibers for the manufacture of pulp. The machine that is employed for this purpose is shown in the accompanying illustration.

The treatment that the wood receives in this machine disintegrates it to such a degree that the chemical solutions that



are employed in the subsequent digestion processes are able to penetrate easily and effectively into the internal structure of the fibers and effect rapid digestion.

As may be seen from the illustration, the machine consists of two rotary knives (1) and (2), which are mounted on the shafts (3) and (4). These rotary knives are located directly one over the other and can be moved closer together or farther apart by means of the hand wheels (5) and (6), which are located at the ends of long vertical threaded spindles (6), to which the rotary knives are also attached. The knives proper, shown at (7), are fixed into the wheels in suitable manner.

The wood that is to be disintegrated into fibers is shown at (8) and is held fast in guides (9) and moved along the same until it comes in contact with the rotating knives. The rate of travel of the wood in the guides is regulated to correspond with that of the rotation of the knives.

Keeping Quality of a Fine Paper

THE methods which were used in determining the strength of the paper were those involved in establishing the tearing length, the stretch and the folding coefficient, and various chemical tests were also made, such as the copper number, the proportion of alpha, beta and gamma cellulose, the acidity, the ash content, the rosin content, the animal glue, casein and starch contents. The original article, which is published in the Swedish magazine, Svensk Pappers-Tidning, 1925, numbers 10, 11 and 12, described the manner in which these tests were made.

In spite of the fact that the tests were made with air dry samples of paper in air that possessed a relative humidity of 65 per cent, the moisture content of the various papers was not the same. The variation amounted to between 6.5 and 10 per cent moisture. Printing papers were found to contain the lowest percentage of moisture, and manila and kraft papers were found to contain the highest percentages of moisture.

In determining the folding coefficient, it was found that there was practically no difference in the results when the speed of folding was varied, thus from 80 to 110 folds per minute. When the speed of folding was increased to 140 folds per minute, then it was found that the folding number was reduced by about five per cent.

Direct determination of the chemical constants of the paper does not give very satisfactory results. The paper sample must first be mashed up to form a loose mass of fibers, much like an absorbent cotton. The Schwalbe method was used for the determination of the copper number. Rosin sized and double sized papers must be treated with boiling hot distilled water. The reducing powers of the glue and filling materials that are contained in the paper were also examined, in connection with the copper number determination. It was found that neither animal glue, rosin sizing nor starch sizes possessed the property of reducing Fehling solution.

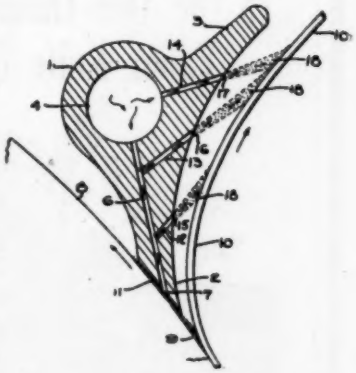
In determining the amount of acid present in the paper the entire paper sample was employed. The paper sample which had been prepared according to the above method was subjected to repeated extractions with water. Good results were obtained in this manner. The method worked out for this purpose consisted in taking five grams of the paper sample which had first been mashed up and then treating it several times with 250 cubic centimeters of hot water, each treatment lasting about sixty minutes. Then the percentage of acidity in the extract was obtained by titration with a hundredth normal solution of solium hydroxide, using phenolphthalein as the indicator. It was found that the acid substances are stubbornly retained by the fiber and that after seven extractions the extract was still acid in character. The removal of the acid substances in the paper is rapid at the start but then after three to four extractions it reaches a relatively constant value and thereafter the amount of acid removed in each extract decreases very slowly. There did not appear to be any essential difference in the course of the extraction process when either unsized, rosin sized, surface sized or double-sized papers were being examined, as in all cases the acid substances in the paper were removed very gradually. There is, however, some difference in the speed of extraction when treating straight rosin sized paper and surface sized paper, for the acid reacting surface sizing is removed almost entirely in the first extraction.

It is evident that in determining the keeping quality of a paper the proportion of acid substances that it contains is of considerable importance.

Lifting Paper Web from Drying Cylinder

THE illustration shows an arrangement which is employed for the purpose of lifting the paper web from the surface of the drying cylinder or other drying device. The apparatus is patented in German Patent, No. 413,177.

In order to remove the paper web from the surface of the drying cylinder, it is necesary to employ stripping devices, or doctors, which make it possible to separate the paper web from the cylinder without tearing the former. However, these strippers or doctors wear away very quickly, and because they make contact with the surface of the drying cylinders, their edges become uneven and they accordingly roughen up the paper, which is undesirable.

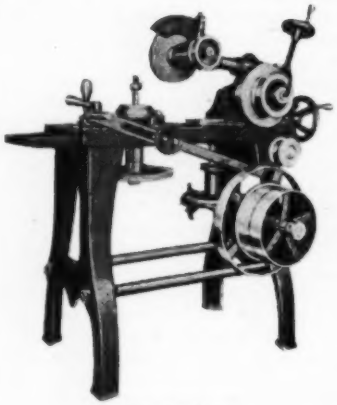


In the new device, which is seen in the figure, the paper web is stripped off the drying cylinder or from a carrying felt by means of an arrangement which makes use of one or more streams of a pressure medium, such as dry steam for lifting the web away from the surface. Arrangements are also provided by the use of several fluids, or current of steam or gas, whereat after the paper web has been lifted off the surface, it can be directed into other directions as for example on to a second drying cylinder. In this way the paper web is led from place to place without coming in contact with any solid supports.

If the stripping and transporting device is used in conjunction with a vacuum dryer, then the pressure medium which causes the movement of the paper web is steam and the steam after it has performed its task must be condensed.

The new stripping device is seen, from the figure, to be possessed of a tongue (2) and a posterior part (3). The middle portion of the doctor (1) has a large hole (4) which serves for the insertion of a tube or shaft. A channel (6) leads from the hollow portion (4) and this opens out in the tongue (2) at the point (7). In operation the drying cylinder (8)

Most Every Paper Mill Has Koegel Equipment



THE STANDARD
Capacity—8½-inch Diam. Slitters

Specifications: Floor space, 27"x 42"; speed of spindle, 55 revolutions; driving pulley, 9"x2½"—speed, 400 revolutions; emery wheel, 7"x½"—speed, 3,000 revolutions; weight, about 425 lbs.

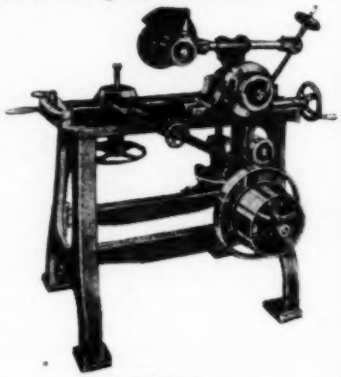
Over 800

Standard Koegel Patent Universal Slitter and Circular Knife Grinders are in the paper and pulp mills of the United States and Canada. What greater evidence could be offered for the universal service this grinder renders?

For Greater Capacity

The Koegel No. 4 Patent Universal Slitter and Circular Knife Grinder is built for Slitters up to 16" in diameter. In mills where larger diameter knives and slitters are used, 150 are in service.

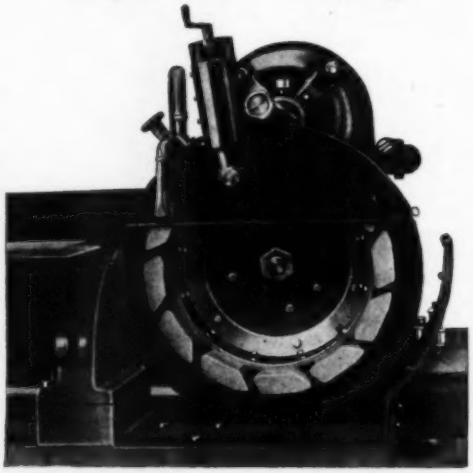
Here are the specifications: Floor space, 32"x52"; speed of spindle, 55 revolutions; driving pulley, 10"x2½"—speed, 400 revolutions; emery wheel, 8"x½"—speed, 3,000 revolutions; weight, about 525 lbs.



THE KOEGEL No. 4
Capacity—16-inch Diam. Slitters

CHAS. KOEGEL'S SONS, Inc.
Slitters and Specialties
HOLYOKE MASSACHUSETTS

To the One-Thousandth Inch Paper Knife Grinding

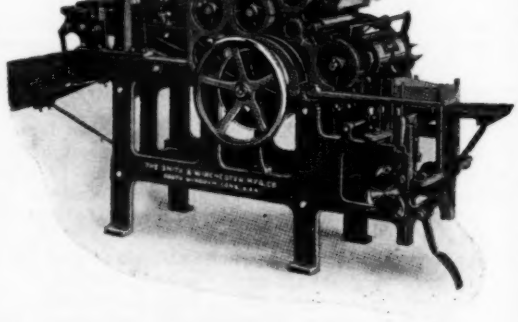


Knife held rigidly stationary. All grinding movements — revolutions of grinding wheel, lengthwise travel, and feed of the work to the wheel, are embodied in the grinding wheel operation. All variation through traveling of long knife carriage eliminated. Knives are clamped rigidly in position and held stationary. Steady consistent development in knife grinding service is shown in our latest general catalog. Send for your free copy.

Machinery Company of America
Big Rapids, Mich., U. S. A.

Established 1822
The
Smith & Winchester Mfg. Co.
SOUTH WINDHAM, CONN.

Manufacturers of
Paper Making Machinery



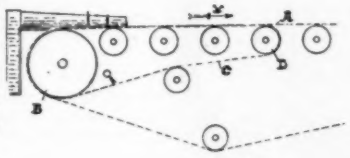
Paper Bag Making Machinery

rotates in the direction of the arrow under the tongue (2). A compressed fluid is led through the channel (6) from the tube which connects in the hollow portion (4). This fluid streams out through the opening (7) in the formation of a current (9), which lifts the paper web (10) from the drying cylinder (8). The paper web then travels in the direction of the arrow to the next drying cylinder in the series. A portion of the pressure fluid also flows back along the surface of the drying cylinder and forms a pocket (11) between the tongue (2) and the drying cylinder (8), so that the stripper (1) does not come in direct contact with the surface of the drying cylinder, but is separated from it by a cushion of gas or steam.

It is advantageous to provide the stripper with a number of other passages or channels, thus (12), (13) and (14), which open out at the points (15), (16) and (17). Thus currents of steam or gas are directed against the paper web and it is guided in its movement from one drying cylinder to the next.

Wire in Fourdrinier Machine

THE inventon which is described in German patent, No. 414,221, is concerned with an improvement in the wire of the Fourdrinier machine, particularly on those machines that work at a high rate of speed, so that a uniform thickness and even structure are obtained in the paper web and so that the dehydration of the web is accomplished as slowly as possible behind the breast roll.



Practical experience with high speed paper making machines has shown that the fibers are apt to be improperly felted together on the wire and as a result the thickness of the paper web is irregular, when the dehydration takes place on the first part of the wire at a high rate of speed. This happens unless certain precautions are taken to avoid it.

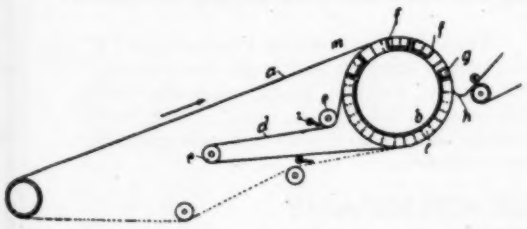
The result of the rapid dehydration naturally is that the fibers have not the time to become arranged in the proper manner on the wire and as a consequence a paper web is obtained which is of varied thickness and its strength and wearing qualities are considerably reduced.

The purpose of this invention, as has been said, is to slow up the dehydrating process and this is accomplished with the aid of a second wire or other suitable endless fabric belt which runs over the breast roll and the wire for a certain length in the direction of the suction box.

As may be seen in the figure, which is a cross section view, longitudinally, of the forward part of the wire, an endless felt (C) is seen to run inside of the wire (A) and over the breast roll (B). The width of the felt is the same as that of the wire. The felt runs in the direction of the travel of the wire, shown by the arrow in the figure and passes over the idler (D).

Suction Roll for Fourdrinier Machine

IN USING suction rolls the common difficulty has been that they bring about the penetration of too large a volume of air through the wire and the suction cells in the roll. For this



reason, there is required a rather large air pump and the consumption of power is high.

In order to prevent the penetration of air into the cells of the suction rolls, or to render this more difficult, it was found advantageous to allow an endless felt to run between the suction roll and the wire on a Fourdrinier machine. This felt is arranged within the endless metal wire and does not accordingly come in contact with the paper web. The felt itself is of the kind that is ordinarily employed on the paper making machine.

In the figure, the wire is seen at (a), which wire is led around the suction roll (b), which is provided with suction cells distributed around its circumference. Between the wire (a) and the suction roll (b) an endless felt (d) is led. This felt runs over rollers (e) which are arranged in the proper manner in order to give the proper tension to the belt and direct its travel. The felt is seen to surround that part of suction roll through which suction is applied, and in this manner it prevents the infiltration of air into the suction roll cells. This results in the external air pressing up against the surface of the paper against the felt and the suction roll effects its water removal action with effectiveness.

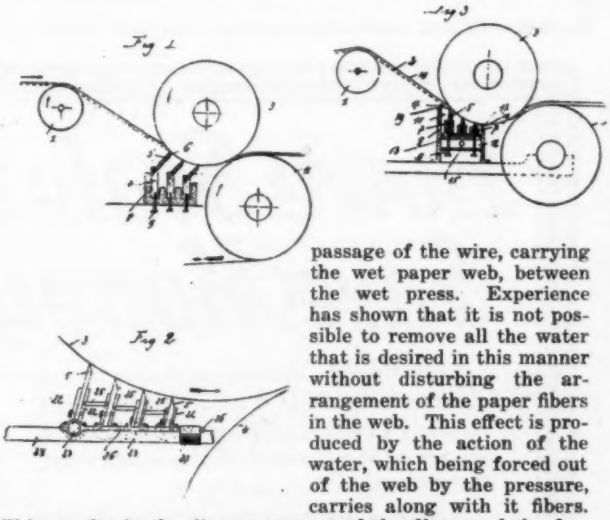
The cells (c) of the suction roll are in combination with the hollow spaces in the shell of the roll which are themselves connected with the air pump.

After each revolution over the suction roll, the felt must be cleaned and the water contained in it must be removed. The cleaning of the felt is accomplished by spraying a stream of water on it from the spray nozzle (i), which is directed against the top of the felt, that which comes in contact with the wire. The water removal is accomplished in a felt washer, which is composed of two pressure rolls between which the felt (d) is conducted, or the water removal may be effected right on the suction roll itself. German Patent, No. 415,349.

Removal of Air and Water in Pulp

FRENCH Patent, No. 591,799, is concerned with a process which has for its purpose the removal of the air and water that are contained in the liquid pulp mixture which comes on the wire of the paper making machine.

In the regular type of paper making machine, it is intended that the greatest part of the water should be removed in the



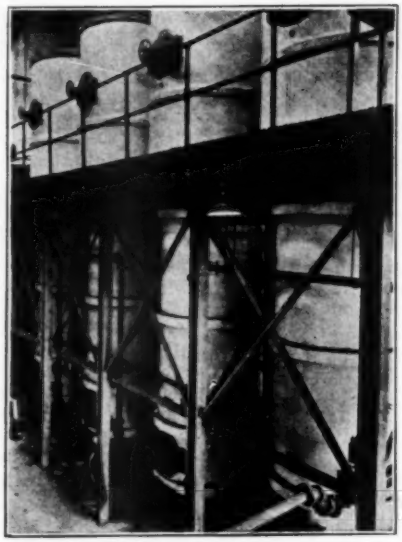
passage of the wire, carrying the wet paper web, between the wet press. Experience has shown that it is not possible to remove all the water that is desired in this manner without disturbing the arrangement of the paper fibers in the web. This effect is produced by the action of the water, which being forced out of the web by the pressure, carries along with it fibers. This results in the disarrangement of the fibers and the formation of a paper sheet of poor quality.

In order to obtain a paper which is homogeneous throughout and which posseses a high mechanical resistance, it is essential that the greatest part of the water be removed before the paper web reaches the wet press, and this is done in the apparatus, patented as above, by the use of a roll which acts on the wet web on the wire and also through the use of strips of soft rubber which come in contact with the under surface of the wire. These rubber strips or doctors actually remove the water that is present in the wire by means of capillary attraction, and the air is removed along with the water.

In the figures 1, 2 and 3, the roll is indicated by (1), over which the metallic wire (2) passes, and comes in contact further on with the press (3). The rubber strips or doctors are shown at (5). During the operation of this device the layer of pulp (10) on the wire (2) is led between the rolls of the press (3) and thus is subjected to pressure between the

IMPROVED BADGER BLACK LIQUOR EVAPORATORS

Recent Installation
NORTHWEST
PAPER CO.
Cloquet, Minn.



NON-FOAMING

MAXIMUM
STEAM ECONOMY

NO ENTRAINMENT

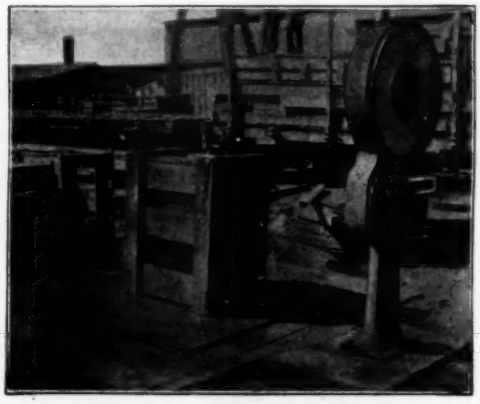
SODA and
SULPHATE
PROCESSES

E. B. BADGER & SONS CO., Boston, U. S. A.

Howe Scales Save Money

"and time is money, says one of our users—we weigh in 4 seconds crates that formerly took 1½ minutes. In labor alone we are saving the cost of the scales every three months."

You can do the same in your plant—Howe Scales backed by 76 years of scale manufacturing experience are the most permanently accurate, durable scales made. Regardless of your conditions, there is a type of Howe Scale which will do the work faster and more accurately.



Write our Engineering Department "F" for information on any type of scale, truck or wagon, railroad track, portable, automatic dial, laboratory, etc. Remember Howe Scales are standard wherever the sun shines.

THE HOWE SCALE COMPANY
RUTLAND, VERMONT

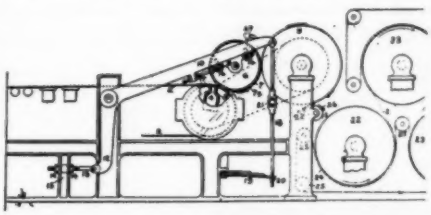
New York, Philadelphia, Cincinnati, Atlanta, St. Louis, Minnespolis, Portland, Boston, Pittsburg, New Orleans, Cleveland, Chicago, Kansas City, San Francisco

wire and the arc of the circumference of the roll coming in contact with it. The friction of the rubber doctors against the wire aids in the expulsion of the air and excess water contained in the pulp. A great deal of water is removed in this manner, and it is then possible to subject it to greater pressure between the rolls of the regular wet press without there being any danger of disarranging the fibers and thus producing a paper which is thicker and stronger in certain parts than in others.

Paper Making Machine

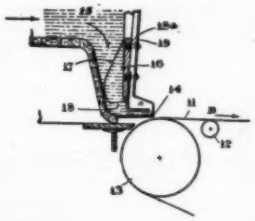
THE illustration shows a paper making machine which is patented in United States Patent, No. 1,553,948.

This paper making machine is provided with supports for the paper web at its wet end and dry end in separated relation to one another. These supports are combined with an interposed transfer means which consists of an adjustable roll having a cushioned surface which is capable of picking up a wet paper web. This roll is driven at the surface speed of travel of the paper web. At the wet end of the paper making machine, there are provided adjustable supporting means for pressing the cushioned surface of the transfer roll upon the wet paper web, and cylinder means at the beginning of the dry end of the machine against which the transfer roll presses for transferring the wet paper web to the cylinder and by which it is delivered to the dryer means at the dry end of the machine.



Flow Box Rectifier for Paper Making Machine

IN A flow box rectifier there are provided a number of plates which are placed within the box. These plates are spaced from one another and extend at spaced intervals across the flow box adjacent the delivery end. The lateral surfaces of these plates are parallel to the normal line of flow through the delivery end of the box. These plates are held in position by means of bolts which pass through them and through the edges of the flow box. United States Patent, No. 1,552,629.



Treating Black Liquor

IN THE original process, which is described in French Patent, No. 553,704, calcium acetate was used in the place of acetic acid or oxalic acid as the flocculating agent for the purpose of separating all or part of the micellae.

The particles that are in suspension in the black liquor and the small fibrillae that are separated out by flocculation and centrifuging are then concentrated directly with the aid of an appropriate solvent such as carbon tetrachloride, trichloroethylene, etc. This allows the separation of the fatty and resinous matters which are subsequently purified. The mass of liquor which has been freed of both its fatty and resinous matter content in this manner can then be put through a chemical process involving hydrolysis for the purpose of recovering from it a certain amount of ethyl alcohol which forms on fermentation. Then again the residual liquor may be subjected to pyrogeneous distillation or it may be put through the ordinary chemical processes of dissolution, congelation, and the like. It may also be fractionated with the idea in mind of separating the different constituents that are contained in it and which may then be used for different purposes. Moreover, these different operations may be so carried out that they followed one another in regular succession.

In those cases where oxalic acid is employed as a flocculating catalytic agent, this acid may be recovered afterwards by converting it into the lime salt before using it in the process.

The residual liquor is separated from the fine fibrillae that it might contain as well as a certain amount of matter in true solution, by treating the liquor with the aid of a base or with animal charcoal. This treatment is then followed out by centrifuging or filtration, as described in French Patent, No. 553,704.

When the residual liquor is treated by fractional distillation, with the idea of removing from it the volatile ingredients that it contains, it is possible to add to the residual liquid the solution that is obtained by condensing the vapors that escape from the lixiviators.

In certain cases before incineration it is possible to treat the liquor for the purpose of removing from it certain valuable organic matters, and then the liquor can be sent to the incinerators wherein the alkali is recovered in the state of carbonates. French Patent, No. 27,597 Additional.

Bleaching of Sulphate Pulp by Means of Calcium Hypochlorite

A SERIES of experiments were carried out with the purpose of determining the feasibility of bleaching commercial grades of sulphate pulp with the aid of calcium hypochlorite liquor. The treatment was intended to remove the lignin in the pulp without causing any change in the character of the cellulose itself. The investigation included the use of a number of solution of chloride of lime of different concentrations and different degrees of alkalinity.

The following process was then employed for testing the quality of the bleached pulp. First, there was determined the solubility of the bleached cellulose in a hundred parts of a three per cent solution of sodium hydroxide after being allowed to remain in contact with the liquor for a period of one hour. The purpose of this test was to establish the percentage of cellulose derivatives and degradation products and newly formed ozycellulose that was contained in the pulp.

Then a test was made to determine the capacity of the sulphate pulp for absorbing chlorine, a part of which is employed for oxidation of the lignin, and another part for oxidizing the cellulose and forming degradation products.

Then the lignin value of the cellulose was determined. This was done by taking a 0.1 gram sample of the dry pulp and dissolving the same in twenty-five cubic centimeters of concentrated sulphuric acid. The color which is produced on the pulp after an hour's treatment was then compared with 0.1 gram sample of cellulose of known lignin content. If the treated sample of pulp shows a methyoxyl content of 0.45 per cent, then it follows that it contains the same proportion of lignin.

The results that were obtained from this series of experiments showed that the bleaching process which is carried out with the aid of chloride of lime solution in alkaline condition and saturated with lime has the least possible effect on the cellulose fibers themselves and bleaches the pulp with the least consumption of bleaching liquor. When as much lime is present in the bleach liquor as it will hold, it appears that the decomposition action of the chlorine on the cellulose fibers with the resulting formation of degradation and oxidation products is avoided. Paper Makers' Monthly Journal, 1925, page 215.

Reddening of Sulphite Pulp

EXPERIMENTAL digestions were carried out in glass tubes with pure chemicals and the pulp was treated with hydrogen peroxide. The depth of the red color increased with increasing lignin content of the pulp, independently of the composition of the liquor and of whether the wood was previously extracted with organic solvents. Since the lignin content of the pulp cannot be reduced with modifying the quality of the latter, it was concluded that it was not possible, by changing the composition of the liquor, to produce pulp of the same quality, but having a lesser tendency to redden. Lignin in wood does not redden with hydrogen peroxide, and the reddening of the pulp is due to lignin sulphonic acid or its salts. These may be removed by hydrolysis with dilute acid, and the tendency to redden is therefore greatly reduced. If wood is boiled with normal sodium sulphite solution, it will not redden; the acid action of the digestion liquor is also necessary to produce this tendency. Zellstoff und Papier, 1925, pages 258-260.

ROEPER ELECTRIC HOISTS

As Strong as Twenty Men
As Accurate as One

When you pull on the cord the ROEPER TYPE "R" Electric Hoist goes to work with the strength of twenty men, right under your guidance. Unsurpassed for handling paper rolls, calender rolls or other heavy lifting.

SEND FOR BULLETIN

ROEPER CRANE & HOIST WORKS, Inc.
1724 North 10th Street READING, PA.

H.S. TAYLOR, Consulting Engineer
Member Am. Soc. C. E.—Am. Soc. M. E.—Eng. Inst., Can.
PULP, PAPER AND FIBRE MILLS
HYDRO-ELECTRIC AND STEAM POWER PLANTS
PLANS—SPECIFICATIONS—EVALUATIONS—REPORTS—CONSULTATIONS
Jefferson St. Arcade, Dayton, O. Guarantee Bldg., Montreal, P. Q.

C. C. HOCKLEY
Consulting Engineer
Paper & Pulp Mills
Power Plants
Industrial Reports
Appraisals
Northwestern Bank Building
PORTLAND, OREGON

FERGUSON ENGINEERS
JOHN F. FERGUSON
Complete Pulp & Paper Mills, Investigation of New Enterprises, Special Heat & Power Applications, Hydro-Electric Developments, Steam-Electric Power Systems, Sectionalized Paper Machine Drives.
Analysis, Design, Construction, Operation Efficiency
Holyoke, Mass. 1210 First National Bank Bldg. CHICAGO, ILL.

James L. Carey
Paper Mill Architect and Engineer
208 N. Laramie Ave.,
Chicago
Cable Address: JASCAR, Chicago
Codes ABC 5th, Western Union

Robins Conveying Systems
FOR HANDLING BULK MATERIALS
Write for Handbook of Conveyor Practice
ROBINS CONVEYING BELT COMPANY
New York Chicago Pittsburgh Boston

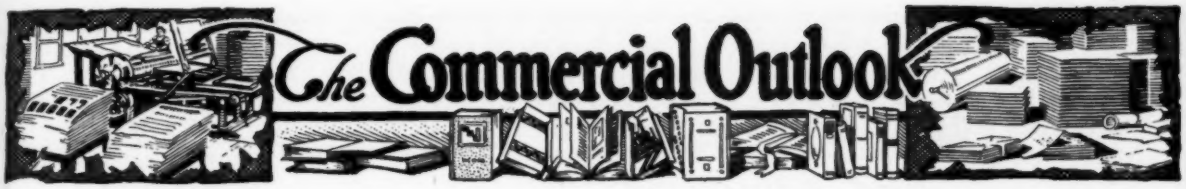
J.H. WALLACE & COMPANY.
TEMPLE COURT BUILDING NEW YORK CITY, U.S.A. CABLES, TRIPLEX, N.Y.
PULP PAPER AND POWER PLANTS
ENGINEERS & CHEMISTS
INDUSTRIAL DESIGN PLANT IMPROVEMENT LABORATORY TESTS

KARL A. LEFREN
Consulting Engineer
Member A. S. M. E.
171 Madison Ave., New York City
INDUSTRIAL POWER REPORTS
PAPER AND BOARD MILLS DESIGNS
MILL CONSTRUCTION CONSTRUCTION

GEORGE F. HARDY
M. AM. SOC. C. E.
M. AM. SOC. M. E.
M. ENG. INST. CAN.
Mill Architect and Consulting Engineer
Langdon Building
305-309 Broadway, New York
SPECIALTY:
Paper, Pulp and Fibre Mills
Water Power Development
Steam Power Plants
Plans and Specifications
Valuations, Reports
Consultation
Cable Address: "Hardistock"
A. B. C. 5th Edition
Bedford McNeill
Western Union
Bentley's

V. D. SIMONS
Industrial Engineer
PULP AND PAPER MILLS, HYDRO-ELECTRIC AND STEAM POWER PLANTS
ELECTRIFICATION PAPER MILL PROPERTIES
39 S. LA SALLE ST.
CHICAGO

HARDY S. FERGUSON
CONSULTING ENGINEER
200 FIFTH AVENUE NEW YORK CITY
Member Am. Soc. C. E.
Member Am. Soc. M. E.
Member Eng. Inst. Can.
PAPER, PULP AND FIBRE MILLS INCLUDING BUILDINGS AND COMPLETE MECHANICAL EQUIPMENT
WATER POWER DEVELOPMENT
DAMS, STORAGE RESERVOIRS AND OTHER HYDRAULIC STRUCTURES
STEAM PLANTS
Examinations
Reports
Estimates of Cost
Designs
Specifications
Valuations



New York, October 1, 1925.

REPORTS almost without variation tell of increasing activity in the paper industry. Fall demand is developing in a satisfactory manner and in a volume quite gratifying to manufacturers and jobbers. Buyers in practically all the paper consuming trades have been more generally in evidence in recent weeks, and the orders that have been placed involve a sufficient tonnage of paper not only to cause mills in a great many cases to speed up their production but to give a majority of manufacturers enough to do to keep them on a fair production basis for some time. The increase in demand appears founded on two outstanding factors. One is that consumers are in need of larger supplies of paper since activity in their own lines has expanded; the other is that the stiffening tendency in paper prices has stimulated demand—as it invariably does.

The outlook is, to say the least, highly encouraging. General business is improving steadily and there are numerous signs that substantial more improvement will be recorded before commercial and manufacturing activity gets up to within the scope that is expected during the approaching winter. In other words, even though consumption of paper has mounted appreciably in recent weeks, there seems every reason to believe a further large increase is yet to be noted. The market condition is healthy to an extreme. It is true buyers are anticipating their requirements to a far greater degree than they have in a lengthy spell, but there are few indications of any of them piling up stocks; on the contrary, demand is still confined almost solely to actual wants although buyers in numerous cases are placing orders for deliveries some time into the future. Mills also are carrying limited stocks, according to reports. Manufacturers are gauging their output in proportion to the demands made upon them by customers; few are accumulating stocks other than are actually needed to cover commitments.

The improvement in the market has been caused principally and primarily by the fact that consumers have enlarged their buying. On every hand there are evidences of more paper being used than during the summer period; in fact, it is probably not going too far to say that relatively more paper is being consumed today than is the case ordinarily at this time of the year. Newsprint consumption is touching the high spots, while there has been a big gain in book paper consumption by magazine and other publishers. Printing establishments are using more paper; then, too, retail trade is recovering, which means larger quantities of wrapping and tissue paper are being consumed as well as box board.

Sentiment in the trade is very confident and noticeably optimistic. Manufacturers are looking for a big volume of business during the winter, while paper merchants, who are in closer touch with the actual consumer and who therefore can judge the pulse of the market to a finer degree, expect excellent demand of broad dimensions and of very healthy character. There is a feeling in the trade that prices of many classes of paper will score advancement in the next few weeks. Production costs are, if anything, rising, and it is no secret among paper men that many mills have been marketing their product for some time past at little or no profit; obviously, in view of these circumstances it is believed manufacturers will raise their prices just as soon as market conditions warrant. And it is expected business in paper of most kinds will soon reach sufficient volume to put producers in a more or less independent position; that is to say, where they will not be obliged to compete with one another so keenly and where they can afford to hold out for full quoted prices.

The monthly statistical review of the Department of Commerce of the box board industry for July reflects marked improvement in production. During July board mills produced a total of 196,522 tons of board of all kinds, showing an appreciable increase over the 190,310 tons produced in June. Board mills operated at 94.6 per cent of capacity in July, based on the five-day working week, operating a total of 8,272,036 inch hours, against 7,983,150 inch hours in June. Orders received during July called for a total of 218,040 tons of board, compared with 193,564 tons in the preceding month, while mills had unfilled orders at the end of July calling for 111,919 tons of board, against 92,022 tons at the end of June. Shipments of box board from mills in July aggregated 190,667 tons, contrasted with 184,928 tons in June.

July employment in the paper and pulp mills of the country showed an improvement over June, according to the Bureau of Labor Statistics of the Department of Labor. Two hundred and four paper and pulp mills reported their employment in June at 52,607, increasing in July to 53,145, an increase of one per cent. The payrolls in these mills, however, decreased 0.9 per cent. Employment in July this year showed a gain of 3.4 per cent over the similar month of 1924, while payrolls increased a matter of 6.2 per cent over last year.

Taking the newspapers in the metropolitan territory as a criterion, consumption of newsprint is close to record levels at present. Publishers in New York are printing exceptionally large issues, and reports state that circulation is mounting, reflecting the drives which have been made in the last couple of months. Morning newspapers in this city are putting out issues of 52 and 56 pages quite frequently; it is nothing uncommon for some of the largest circulated morning dailies to print at least three issues of 52 pages each a week. Afternoon papers are publishing issues of 36, 40 and 44 pages.

Despite this increased consumption, reports persist that a reduction in the contract price of newsprint for 1926 deliveries will be announced shortly by leading manufacturers. It is said that the cut will be $5 a ton, reducing the contract basis to $65 per ton, compared with the prevailing price all of the current year of $70 f. o. b. mills. The reason for this probable cut is that one of the large Canadian producers has announced a price of $65 for next year, and it is expected other manufacturers will deem it advisable to follow suit.

Book paper demand is good and is expanding steadily. Contract mills are well sold ahead and are not able to promise deliveries within four to five weeks. Prices are firmer.

Fine papers are moving in increasing amounts, with reports telling of mills speeding up production. A very gratifying feature of the market is that buyers are ordering in larger volume. Jobbers seem more disposed to take in bigger supplies, while the individual consumer is not paring his purchasing down to the fine points that he was. Fine paper prices incline upward.

There has been a marked increase in business in coarse paper. Merchants all over the country are laying in supplies of kraft wrapping in preparation for their busy pre-holiday season, and mills are reported well fixed with commitments. Moreover, less is heard concerning foreign competition.

Manufacturers of box boards are enjoying greater activity than in months. This is particularly true as regards container boards, while plain box boards are wanted in much larger volume also. Prices of plain chip are firm at around $47.50 a ton delivered New York, while filled news board is quoted at $50 New York.

Roofing paper mills are reported operating on a good scale and shipping out unusually large amounts of their product for this season of the year. The same is true as concerns wallboard plants. It is expected demand for paper and board used in the building trades will continue abnormally active well into the winter.

Quality First

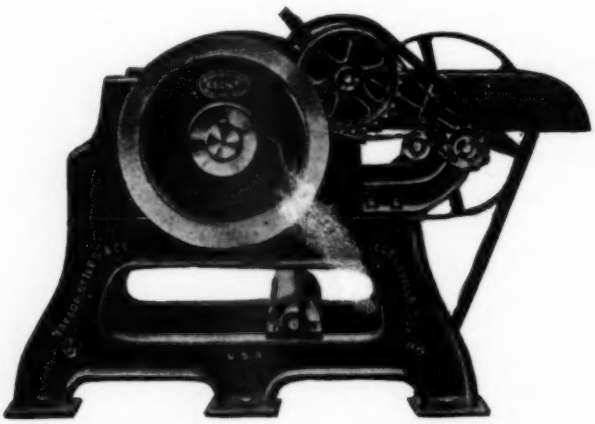
—and Always

ALKALI

There is no need for specifications when you order Diamond Alkalies—The quality is guaranteed—Diamond Soda Ash over 99% pure—Diamond Caustic Soda over 98% pure.

Manufactured and Sold Direct to Consumer by

DIAMOND ALKALI COMPANY
PITTSBURGH, PA.



RAG CUTTERS

Whatever You Cut, a GIANT Will Solve Your Problem

LET US FIGURE IT OUT FOR YOU

Taylor, Stiles & Co., Riegelsville, N. J., U.S.A.

WATEROUS ENGINE WORKS
Brantford, Ont., Canada
Canadian Representatives

R. J. MARX
133 Finsbury Pavement, London E. C.
Sole Agents for Europe

Domestic Raw Materials

Papermaking Rags

It might be said that the condition of the papermaking rag market is very nearly opposite to what it usually is at this time of the year. There is a surprising lack of voluminous demand from consuming quarters, and the trend in prices of most classes of rags is in a downward direction; usually at this season paper mills are buying quite actively and prices are stiffening under the brisk movement of supplies into consuming channels and with winter approaching.

It is somewhat difficult to explain the prevailing condition of the market. Reports in a great majority of cases tell of paper mills being fairly busy, yet few of them are purchasing rags except in a restricted manner. This would seem to indicate manufacturers have ample supplies of rags on hand, and this, so it appears, is exactly the case. Most paper mills apparently are using up stocks which they have had in their warehouses, and are operating as buyers in the market now only to fill in requirements as they develop, with the result there is little or no concerted demand from any single mill quarter.

The market is not lifeless by any means. There is business going through right along but there isn't the snap to the demand that ordinarily is to be noted at this period of the year. Consequently prices are on the downslide even though conditions at the supply source are such as would make for a strong price tone were demand a little broader. Plenty of signs are visible to the effect that available supplies of papermaking rags are low. Domestic collections are limited, and it is evident dealers in Europe have small accumulations of rags of practically every grade. Consumption by roofing paper mills thus far this year has been close to record-breaking proportions, which has removed tremendous quantities of rags off the market, not only the grades usually used by such consumers but also some of the slightly better qualities which other paper manufacturers are accustomed to consume.

It is the contention of dealers that papermakers have adopted a very wise policy of using up stocks on hand and replenishing cautiously and slowly, since it is believed any spurt in demand would lead to a fairly sharp jump in prices. The fact should not be lost sight of that all during the current year rag consumption has kept up in comparatively heavy volume; perhaps the higher qualities have moved in less than normal quantities but the low grades have been bought and consumed in very large tonnage. It stands to reason, therefore, that present supplies in the hands of packers and dealers cannot be over-large; in fact, it is logical to believe accumulations are below a normal average, particularly as production of new cotton rags has been small and collections of old rags have been subnormally light. The thing that has protected papermakers from paying exorbitant prices for rags has been the enormous supplies imported from Europe and elsewhere; only for this there is no doubt papermaking rag prices would be on very high levels.

The probabilities are there are some limited-sized accumulations in dealers' hands at present. Imports have kept up on a rather large scale even though consumers have bought sparsely in recent weeks, and it is likely importers are holding some lots awaiting a more favorable demand from mills. It probably will require some volume of buying by paper manufacturers therefore to clean up these stocks before any appreciable change in prices will occur. But it cannot be denied that the statistical position of the market is firm and rather bullish in that it would not take a great deal of demand to wipe away accumulations and put rags in a situation where prices would be influenced in an upward direction by additional buying.

New cuttings are holding their own in price in a majority of cases although some slight recession has been noted in certain grades. Dealers quote No. 1 white shirt cuttings at 14.75 to 15 cents a pound f. o. b. shipping points in most instances, while unbleached muslins are held for 15 cents and higher. Light silesias are quoted at 11.50 cents, washable at 7.50 cents, blue overall cuttings at 11.75 cents, and light flannelettes at 13 cents.

Quotations on old whites have eased to some extent to around 8 cents per pound at shipping points for No. 1 repacked, and 5 cents for No. 2 repacked whites. Thirds and blues are reported very difficult to sell excepting in small lots, and prices range from 3.50 to 3.75 cents a pound for repacked, and 2.50 to 2.75 cents for rough packing. Roofing rags have moved off gradually in price to where purchases by felt paper mills have been reported at 2.30 cents a pound at dealers' points for No. 1 packing, and 2 cents for No. 2 stock.

In foreign rags, dark colored cottons are quoted around 2 20 cents ex dock New York although it is stated some purchases have been effected down to 2.10 cents. Old linens are in slow call and are tending lower, while new light prints have been reported offered by importers at 7.50 cents ex dock.

Average quotations f. o. b. shipping points and ex dock New York are as follows:

New Stock—	New York and Chicago
White shirt cuttings, No. 1	14.50-15.00
White shirt cuttings, No. 2	10.25-10.75
Fancy shirt cuttings	9.25- 9.50
Washables, No. 1	7.25- 7.50
Unbleached muslins	14.75-15.25
White lawns	13.50-14.00
Overall cuttings, blue	11.50-11.75
Black silesias	6.50- 6.75
Light flannelettes	12.50-13.00
Canton flannels, bleached	13.50-14.00
Canton flannels, unbleached	13.25-13.50
Shoe cuttings, bleached	13.00-13.50
Shoe cuttings, unbleached	12.00-12.50
Light silesias	11.50-11.75
O. D. khaki cuttings	7.00- 7.50
Mixed khaki cuttings	6.25- 6.50
Corduroy cuttings	6.00- 6.25
Cottonade cuttings	5.25- 5.50
Linens, No. 1 white, foreign	16.00-17.00
Light prints, foreign	7.50- 7.75
Old Stock—	
Whites, No. 1, repacked	7.50- 8.25
Whites, No. 2, repacked	4.75- 5.25
Whites, house soiled	3.50- 3.75
Whites, street soiled	3.00- 3.25
Lace curtains	6.50- 7.00
Thirds and blues, rough	2.50- 2.75
Thirds and blues, repacked	3.50- 3.75
Black stockings	4.50- 4.75
Cotton canvas, No. 1	5.75- 6.25
White cotton batting	4.00- 4.25
Roofing, No. 1	2.25- 2.35
Roofing, No. 2	2.00- 2.10
Dark colored cottons, foreign	2.10- 2.25
Blue linens, foreign	5.50- 6.00
Gray linens, foreign	6.00- 6.50
White linens, foreign	10.50-11.00
Light prints, extra, foreign	3.75- 4.00

Rope and Bagging

Paper mills are reported evincing considerable interest in old rope of domestic origin and to be absorbing supplies of this material in a steady way. On the other hand, not much

A MARK OF RESPONSIBILITY ON PRODUCTS OF STANDARD QUALITY

GENERAL CHEMICAL COMPANY

ALUMINUM SULPHATE

"Standard Purity" has a very definite meaning, when applied to General Chemical Company products. It means a degree of uniformity which makes it possible to standardize the results of processes into which the company's chemicals are introduced.

An inquiry directed to any General Chemical office will enlist a nation-wide organization in your service.

GENERAL CHEMICAL COMPANY

40 Rector Street, New York

Baltimore, Buffalo, Chicago, Cleveland, Easton, Denver, Los Angeles, Philadelphia, Pittsburgh, Providence, San Francisco, St. Louis

The Nichols Chemical Co., Ltd., Montreal

Cable Address: Genchem, N.Y.

Established 1903 Wm. J. McGarity, Prop.

Penn Paper and Stock Co.

Wholesale packers and distributors of all the assortments of waste paper. Capacity 150 tons daily.

Main Office and Packing House

240 North Front St. PHILADELPHIA, PA.

JOSEPH GATTI President and Treasurer

GATTI Paper Stock Corporation

Formerly with the Gatti-McQuade Co.

Paper Manufacturers' Supplies

COTTON AND WOOLEN WASTE

All Grades of Rags and Paper Stock, New Wrapping Paper, Box Board and Cordage

Main Office
41 East 42nd St., New York
Liggett Bldg.

Packing House
13th and Monroe Sts.
Hoboken, N. J.

THE DRAPER FELT

Unexcelled for strength, openness, resiliency, and general running qualities. Made to meet the most exacting conditions on all types of machines and all kinds of papers. Only one grade and that the highest.

Made by

DRAPER BROTHERS COMPANY

CANTON, MASS.

Woolen Manufacturers Since 1856

REPRESENTATIVES

L. H. BREYFOGLE, Kalamazoo, Mich. INTERNATIONAL TRADING CO., Philadelphia, Pa.

demand prevails for imported old rope, and there is a wide difference in prices prevailing on the domestic and foreign article. Domestic old manila rope of No. 1 grade is fetching 6.75 to 7 cents per pound at dealers' shipping points, whereas about all consumers offer for foreign old rope is 5.75 cents ex dock New York. A matter of quality is said to be the reason for the preference shown for domestic old rope.

Old bagging is in fairly good demand and is steady in price. No. 1 scrap bagging is selling to paper mills at 2.60 cents a pound f. o. b. New York for the best packings, while roofing bagging is bringing 1.90 cents at shipping points and probably a little higher in some cases.

Strings are in moderate call at prices of 1.75 to 2 cents per pound for mixed strings, and 3 to 3.25 cents for sisal strings at shipping points.

F. o. b. shipping point and ex dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	3.00-3.25
Gunny, No. 1 foreign	2.90-3.15
Scrap bagging, No. 1	2.50-2.75
Roofing bagging	1.85-2.00
Wool tares, heavy	2.75-3.00
Wool tares, light	2.65-2.85
Manila rope, No. 1 foreign	5.75-6.00
Manila rope, No. 1 domestic	6.75-7.00
Sisal strings	3.00-3.25
Mixed strings	1.75-2.00

Old Paper

There appears to be only just enough activity in the waste paper market to sustain prices on a fairly stationary level. The tendency of some grades is downward; on the other hand, there are certain grades which are in rather light supply and which are moving into consuming channels in a manner making for a firming price trend. Board and paper mills are buying in a reserved way, doing little anticipating and seeking to keep only their near requirements filled. However, the limited demand is offset in a measure by the subnormal collections and but slight changes are occurring in market levels.

Probably the firmest grade is kraft paper. Both new and old kraft are moving freely and are quoted at strong prices, with sellers frequently asking slightly higher figures and emphasizing the small amounts of such paper available in packing circles as a reason for the advanced quotations. Old No. 1 kraft is priced at 2.30 cents per pound f. o. b. New York, while 3 cents or close to this figure is asked for new kraft cuttings. Shavings are steady at 3.60 to 3.80 cents a pound at dealers' points for No. 1 hard white and 2.75 to 3 cents for No. 1 soft white shavings. Heavy No. 1 book stock is quoted at 1.15 to 1.25 cents per pound; ledger stock at 1.40 to 1.75 cents, depending on the quality of packing, and white blank news at 1.90 to 2 cents. Folded news commands 70 to 80 cents a hundred pounds at shipping points, and No. 1 mixed paper 55 to 65 cents.

The following are prices f. o. b. shipping points:

	New York and Chicago
Hard white shavings, No. 1	3.60-3.80
Hard white shavings, No. 2	3.00-3.25
Soft white shavings	2.75-3.00
Colored shavings	1.15-1.30
Heavy book, No. 1	1.15-1.25
Crumpled book, No. 1	.85- .95
Ledger stock	1.40-1.75
Kraft, No. 1	2.25-2.35
Manilas, No. 1	.85-1.00
White blank news	1.90-2.00
Over-issue news, No. 1	.80- .90
Folded news	.70- .80
Sulphite mill wrappings	.75- .85
Mixed paper, No. 1	.55- .65
Common paper	.35- .40

Pulp Wood

With pulp manufacturers speeding up production, demand for pulp wood is increasing and reports state orders are coming in faster and for larger lots than in some time. The

GENERAL DYESTUFF CORPORATION
Successor to Dyestuff Department of H.A.METZ & Co.

Diamine, Alizarine,
Indanthrene,
Helindon, Hydron
and other
Colors
of Domestic and Foreign
Manufacture

Sole Importers of
the Dyestuffs Manufactured by
Farbwerke, vormals Meister,
Lucius & Brüning,
and
Leopold Cassella & Co., G. m. b. H.

New York Office: 122 Hudson St.

Boston, Mass.
Philadelphia, Pa.
Providence, R. I.
Charlotte, N. C.
Chicago, Ill.
San Francisco, Cal.

ROSIN
That Is Sold Direct

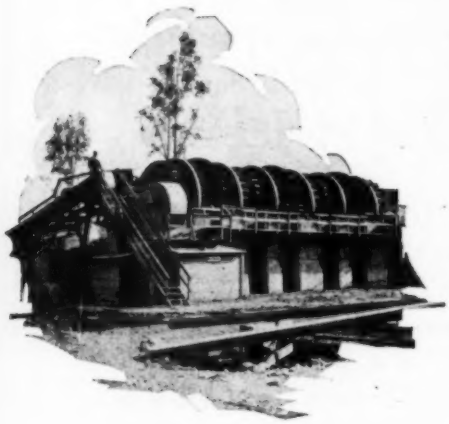
HERCULES Wood Rosin is made under strict chemical and physical control. It is uniformly clean, has good sizing properties, and is sold direct from producer to consumer. Write us for complete information.

HERCULES POWDER CO.
941 Market Street, Wilmington, Delaware

Sales Offices:

Allentown, Pa.	Huntington, W.Va.	Pittsburg, Kan.
Birmingham	Hazleton, Pa.	Pittsburgh
Buffalo	Joplin, Mo.	Pottsville, Pa.
Chattanooga	Los Angeles	St. Louis
Chicago	Louisville	Salt Lake City
Denver	New York City	San Francisco
Duluth	Norristown, Pa.	Wilkes-Barre

EFFICIENT MILL EQUIPMENT



KEEPING production up at the lowest operating cost is significant of Manitowoc equipment. Everywhere it is in service it bears witness to this fact.

Because Manitowoc Digesters, Incinerators, Rotary Lime Kilns, Diffusers, Tanks, Disc Evaporators, Barking Drums, Refiners, etc., are built up to a high standard, they perform economically and increase mill efficiency. They are designed and constructed to meet the exacting conditions of the mill.

Write for special bulletins on paper mill equipment

Manitowoc Engineering Works
Manitowoc, Wisconsin

MANITOWOC

The survival of the fittest

The easiest way to survive competition is to reduce the cost of production.

Our equipment will help you to do this:

Jenssen Acid Towers
Jenssen Spray Coolers
Bullard Gas Washer
Decker Cooking Process
Kamyr Feltless Wet Machine

G. D. Jenssen Co.
200 Fifth Ave., New York City

UNION SULPHUR

The Best for Better Sulphite Pulp

Guaranteed 99½ Per Cent Sulphur
Combined with 100 Per Cent Service

Substantial warehouse stocks always maintained at strategically located seaboard stations insure

Prompt Delivery Against All Orders

The Union Sulphur Company
Frasch Bldg., 33 Rector St., New York, N. Y.

price tone is steady to firm. Peeled wood of 4-foot length is quoted from $17.50 to $19 per cord f. o. b. points in Upper New York State, while 2-foot rossed wood is fetching $22 to $23 a cord.

Exports of pulp wood from Canada, practically all of which came to the United States, during the first eight months of 1925 totaled 1,067,780 cords, valued at $10,538,837, contrasted with 994,072 cords of a value of $10,083,428 exported in the corresponding period a year ago.

Mechanical Pulp

Ground wood is in a steady market position. Demand is reported developing in consistent fashion and showing gradual expansion, with the result surplus mill holdings are being reduced and prices exhibit a firming tendency. There has been little or no actual change in market levels, however. Domestic grinders quote in the vicinity of $28 to $30 a ton f. o. b. pulp mills for prime spruce ground wood for prompt shipment, while Canadian ground wood, freshly ground, is quoted on a basis of about $26 a ton f. o. b. Quebec points. It is said that some supply of pulp is available in certain parts of the Dominion at as low as $24 to $25 a ton, but that the additional freight brings the cost delivered at consuming centers up to the same level as ground wood shipped from nearer points.

Dealers assert there is every likelihood of higher mechanical pulp prices later in the year. Consumption is on a large scale, particularly in news print and board mills, and consumers frequently are coming into the market to absorb extra tonnage. There are some producers who have surplus stocks accumulated during the summer but there is little or no pressure to sell because supplies are being conserved against forward needs.

Chemical Pulp

Demand for chemical pulp is active. Reports say that consumers are buying on a fairly large scale despite the fact orders have been placed for some big tonnages for shipment well into the future. The market tone is firm to an extreme and it appears as if the technical position is growing stronger day by day. Producers in Scandinavia are well sold up and therefore are offering further supplies cautiously; matters in connection with foreign pulps have reached a point where buyers really are having difficulty getting all the supply desired and consequently are turning more and more to domestic and Canadian manufacturers to cover their wants.

It is declared to be a fact that a good many pulp producers in the U. S. and in Canada are sold up for several months. These manufacturers are speeding up production and are doing little else at present than filling contracts. Obviously, under such circumstances prices display a stiffening tendency; sales are reported from time to time at advanced levels, and predictions are for higher prices. Leading manufacturers of bleached sulphite quote at about a minimum of 3.87½ cents a pound f. o. b. pulp mills for No. 1 bleached sulphite. No. 1 unbleached sulphite is selling at 2.75 to 3 cents, with the higher figure named more often than the lower. News grade sulphite is quoted at around 2.70 cents, and bleached soda pulp at 3.50 cents at producing plants. No. 1 domestic kraft pulp is fetching around 3 cents at pulp mills.

F. o. b. pulp mill quotations are as follows:

Bleached sulphite	3.87½-4.25
Easy bleaching sulphite	3.00 -3.10
Unbleached sulphite, No. 1	2.75 -3.00
News grade sulphite	2.65 -2.75
Soda pulp, bleached	3.50 -3.75
Mitscherlich, unbleached	3.25 -3.75
Kraft, No. 1	2.90 -3.15
Screenings, refined	1.50 -1.75

Chemicals

Steadily improving demand is reported for most chemicals used by paper and pulp manufacturers. Shipments on contracts are moving forward in good amounts and the spot call is increasing. Prices generally exhibit firmness. Bleaching powder is quoted at 1.90 to 2.10 cents per pound at works, the lower price being named to contract buyers only. Soda ash is firm at 1.35 cents a pound in bulk at works, and caustic

CROWN FILLER

The uniformity of the product, the entire freedom from grit, dirt and other impurities make Crown Filler the highest grade of filler available to the paper manufacturer.

Crown Filler is naturally a pure, bright white, *absolutely pure!*

SOLVAY
STANDARD IN SODA SINCE 1881

Sold direct from manufacturer to consumer.

Address all inquiries to

The Solvay Process Co.
Syracuse, N. Y. Detroit, Mich. Hutchinson, Kan.
WING & EVANS, Inc., Sales Department
40 Rector Street, New York

Boston Cincinnati Cleveland
Detroit Pittsburgh Chicago
Syracuse St. Louis Indianapolis
Philadelphia Kansas City

LOOKING AHEAD

YOUR industrial house is probably being set in order for the busy months ahead.

If you have decided to let International meet your salt requirements you are freed from anxiety regarding the purity of this important material as well as the punctuality of deliveries.

The expert organization and extensive resources back of International Salt are the best guarantee of satisfaction.

SCRANTON PA.

INTERNATIONAL SALT COMPANY, Inc.

NEW YORK OFFICE 2 RECTOR ST.

Uncle Jake says—

Every time you give the other fellow a boost, it's a hitch ahead for you.

In my time I've known quite a lot of folks who were always crowding over on the wrong side of the white line of life's highway, but so far's I've been able to observe, they always get the worst of it. I'm always suspicious of a man who constantly shouts "I'm honest,"- but by gum! if there's any better way than playing the game on the square, somebody's holding back from the world some mighty valuable information.

Down our way, we believe in boosting the other fellow's business because we know it pays him and pays us and so when I advise you to buy K. V. P. papers for all uses I can go home and sleep soundly because I know if you follow my advice it will help both of us.

Yours truly,

Uncle Jake
of the

KALAMAZOO VEGETABLE PARCHMENT CO.

KALAMAZOO, MICHIGAN

New Papers

Writing—	
White rag	15.40
White sulphite	11.30
Colored rag	15-40
Colored sulphite	10-30
Ledger—	
White rag	17-40
White sulphite	13-30
Colored sulphite	12-30
Colored rag	16-40
Bonds—	
White rag	16-40
White sulphite	9-30
Colored sulphite	9-30
Colored rag	15-40
Book—	
No. 1 S. & S. C.	6.50- 8.00
Machine finished	6.00- 8.00
English finished	6.25- 8.00
Coated and enameled	8.00-14.00
Lithograph, M. F.	9.00-15.00
Newsprint—	
Rolls, contract	3.50- ....
Rolls, transient	3.65- ....
Sheets	4.00- 4.25
Side runs	3.00- 3.25
Cover Stock—	
Coated, both sides	10.25
Coated, one side	10.15
Tissue—	
No. 1 white, 20x30	.75- .85
No. 2 white, 24x36	.70- .75
No. 1 manila, 24x36	.70- .75
Kraft	.90- 1.00
Wrapping—	
No. 1 Kraft	5.50- 6.25
No. 2 Kraft	4.75- 5.50

Boards—	New York and Chicago
Solid news	52.50-57.50
Straw	50.00-55.00
Plain chip	47.50-50.00
White coated chip	65.00-70.00
Manila coated chip	60.00-65.00
Binder's board	70.00-75.00

Chemicals

(Continued from page 1161)

soda is quoted 3.10 to 3.20 cents. Casein is in good demand with quotations ranging from 12 to 13 cents per pound.

Average quotations f. o. b. works are as follows:

Alum, lump ammonia	3.50- 3.75
Alum, lump starch	3.75- 4.00
Blanc fixe, powder	3.75- 4.25
Bleaching powder	1.90- 2.10
Brimstone (long ton, at mine)	16.00-18.00
Casein (duty paid)	12.00-13.00
Caustic soda, spot delivery	3.10- 3.20
China clay, domestic washed	12.00-16.00
China clay, foreign	15.00-20.00
Rosin, grade E	13.60
Satin white	2.00- 2.25
Soda ash, 58 per cent light (bags)	1.35- 1.40
Starch, papermakers', in bags	3.40- 3.70
Talc (ton)	16.00-18.00

Rubber Latex Paper in Practical Use

The West Jersey Paper Manufacturing Co., Camden, N. J., working under a license agreement for the use of patents covering the production of latex treated papers, owned and controlled by the United States Rubber Company and in co-operation with their development department, have been experimenting for some months in a commercial way in the production of several special grades of paper containing appreciable amount of rubber.

Recently several sample runs of these papers were subjected to severe practical use and a twenty-five-ton order has just been completed, representing the first carload order ever placed for latex treated paper in the United States.

The results that have been obtained on a latex content paper by the West Jersey Paper Manufacturing Co. definitely disproved the belief by many in the paper trade and some technical organizations that the application of rubber latex was not practical in the manufacture of paper.

This particular order is for the D. J. Molloy Co., Chicago, who will have the exclusive use of latex content papers for book covers and kindred products as a base material in their new MoCo stock. This organization is well known as manufacturers of Molloy-Made covers, and has recently perfected MoCo to give the paper cover field the same quality product that they have in the past made for the more permanent bindings. The code is sold to them through the Seaman Paper Co., of Chicago.

Defiance Paper Co. Takes Over Hammermill Machine Glazed Line

The purchase of equipment and good will for the entire line of machine glazed papers, formerly manufactured by the Hammermill Paper Co., Erie, Pa., has just been announced by T. M. Uptegraff, general manager of the Defiance Paper Co., of Niagara Falls, N. Y.

This announcement, following the one made by the Defiance interests published in the August issue of THE PAPER INDUSTRY, that they had purchased the plant formerly operated by The Pettebone-Cataract Paper Co., indicates a broadening of scope and the healthy growth of the Niagara concern in the industry.

Customs Advance on English Tissue

English tissue paper for stereotype matrice have been advanced in value by the customs officials, because of the discovery by special investigators that certain special concessions were being made to American purchasers or agents. American manufacturers have complained of difficult competition on tissue papers, particularly on the special types, and one of the investigations made abroad showed that special discounts were being given to certain American purchasers.

When this report was received the customs appraisers advanced the valuation to meet the English home market price. The importers appealed to the courts, and the customs courts have upheld the position of the customs officials and disallowed the 10 per cent special discount which had been given.

John S. Riegel, manufacturer of paper and bags, who died June 26, 1916, left an estate appraised at $1,125,100, but he had debts of $401,189, which, with other deductions, left a net estate of only $667,690, according to a report filed September 24. He gave one-fifth of the estate to his second wife, Georgia E. Riegel, and left the remainder in trust for his children, John L., Theodore Riegel, Mrs. Helen R. Oliver and Mrs. Marjorie R. Engalls.

BATHURST LUMBER COMPANY, LIMITED

PRICE & PIERCE, LTD.
17 East 42nd Street, NEW YORK CITY

ARE NOW THE

SELLING AGENTS
for Bathurst Pulp in the United States

Unbleached Sulphite 50 tons daily
Kraft Pulp 50 tons daily

Our pulp is made from Canadian Spruce
We ship in sheets, baled

BATHURST, NEW BRUNSWICK, CANADA

The B.D.C. QUALITY PULPS

HAFSLUND NORWAY — **"HAFSLUND BEAR"** Bleached Sulphite

F: HAGA — **"FORSHAGA"** Bleached Sulphite

KRAFT HURUM NORWAY SPECIAL — **"HURUM SPECIAL"** Extra Strong Kraft

KOOS BAC — **"BAMBLE"** Extra Strong Kraft

The Borregaard Company
200 Fifth Ave. Incorporated New York, N.Y.

The Pulp and Paper Trading Co.
21 East 40th Street New York City

DEALERS IN DOMESTIC CHEMICAL AND MECHANICAL PULPS AND PAPER

AGENTS FOR
J. & J. Rogers Company, Ausable Forks, N. Y.
E. B. Eddy Company, Ltd., Hull, Canada

Canadian Kraft Limited, Three Rivers, Canada
Dealers in Wayagamack Kraft Pulp

Howard Smith Paper Mills, Montreal, Quebec
EASTERN AGENTS of Sulphite Pulp. Made by
Port Huron Sulphite & Paper Co., Port Huron, Mich.

J. ANDERSEN & CO.
21 East 40th Street New York City

Importers of Chemical Pulps
BLEACHED AND UNBLEACHED

Agents for Kellner Partington Paper Pulp Co., Ltd.
Sarpsborg, Norway; Forshaga, and Edsvalla, Sweden

EASTERN MANUFACTURING COMPANY

BLEACHED SULPHITE

Made from spruce
grown in the forests
of Northern Maine.

Send for Samples.

EASTERN MANUFACTURING CO.
292 Madison Avenue NEW YORK

EXPORTS

Exports of paper from the United States during July last showed an appreciable gain over the shipmnets in the same month of 1924, according to figures issued by the Department of Commerce. Total exports of paper of all kinds in July this year amounted in value to $2,065,294, compared with shipments valued at $1,784,124 in the same month a year ago. Exports during the first seven months of the current year totaled in value $13,819,984, against $13,796,949 in the corresponding period of 1924.

Exports of newsprint paper from the U. S. in July last amounted to 1,936,332 pounds, valued at $87,796, against 1,979,800 pounds of a value of $99,818 exported in the same month last year. Largest shipments of newsprint were to Cuba, 593,804 pounds being exported to that country last July, while shipments to South America aggregated 370,186 pounds and to China 358,583 pounds.

Book paper exports in July totaled 1,661,566 pounds, valued at $195,493, contrasted with 1,183,502 pounds of a value of $157,275 exported in the same month last year. Principal shipments were to Cuba, where 470,515 pounds were sent in July last, with other large shipments to Mexico, Canada, Argentina, and the Philippine Islands.

Exports of kraft wrapping paper in July amounted to 23,812 pounds, valued at $1,798, while other wrapping paper exported reached a total of 2,843,238 pounds of a value of $190,026. Writing paper exports in July totaled 365,694 pounds, valued at $85,993.

Other paper exports from the United States in July, 1925, included the following items: Cover paper, 96,815 pounds, valued at $16,098; greaseproof paper, 133,764 pounds, valued at $20,897; tissue and crepe paper, 306,872 pounds, valued at $83,335; toilet paper, 439,639 pounds, valued at $48,811; paper towels and napkins, 154,308 pounds, valued at $24,052; box board, 2,212,744 pounds, valued at $70,733; other paper board, 2,751,392 pounds, valued at $144,815; blotting paper, 270,245 pounds, valued at $34,335; photographic paper, 148,972 pounds, valued at $129,053.

IMPORTS

Wood Pulp

Almost daily the situation in imported wood pulp is growing stronger. The statistical position of the market probably never was firmer and this is reflected in prices, which display a marked tendency to advance. In fact, prices of some classes of foreign pulps have stiffened to a pronounced degree and in certain instances advancement of at least slight proportions has been recorded. Importers agree that only a strong market will prevail for some time to come; most of them are of the opinion that no downtrend is likely in pulp prices for months or at least not until next spring or summer, when larger supplies may come onto the market.

Latest reports from abroad state that mills in Sweden have sold in excess of 50 per cent of their entire 1926 production of sulphite and kraft pulp. A good percentage of sales has been to American consumers, yet possibly a much larger percentage than normally has been to consumers in Europe. Practically no more pulp is available in Sweden for shipment prior to the closing of the Baltic for the winter. Manufacturers have disposed of nearly all the supply they will produce between the present and the end of the year, about when navigation closes, and the principal activity in the trade during recent weeks has involved pulps for shipment from abroad next spring or after the Baltic opens up.

The probabilities are that most consumers in the United States have covered a good part of their requirements over the next few months. Buying has been on a heavy scale for quite a while and some big tonnage contracts have been placed. However, many paper and board manufacturers in this country waited until rather late in the buying movement to jump in and place orders, and it is likely, so it is said, that shipments to numerous buyers here will be late. The cry of "wolf" in the pulp trade, or in other words the announced threat of a scarcity of Scandinavian pulp, has been so frequent in the past that American consumers had long since come to ignore reports of a probable shortage of foreign pulp. Therefore it required some time and some persuasion to convince buyers in this country that pulp supplies in Sweden were not up to normal this year—that is to say, available supplies for export to the United States were limited, due to heavy buying by European consumers in the papermaking trade, as well as in the artificial silk industry. Ultimately, however, buyers here realized that it was not going to be an easy matter to secure all the pulp they might require in Sweden, and buying began with a rush and has now kept up for quite a while, so that mills in Scandinavia are at present probably sold ahead to a larger extent than ever before.

In justice to producers abroad, it should be stated they have not tried to take full advantage of the market circumstances. Swedish manufacturers, from all indications, have honestly endeavored to keep prices within reasonable bounds. Prices have advanced to some extent, but in the face of the heavy buying there has been a surprisingly slight rise in quotations. Producers abroad evidently are proceeding on the theory that pulp prices are high enough, and that if they can maintain market levels within fair bounds they will profit by getting proportionately more business. Therefore there has been no sharp increase in prices, although the big demand that has prevailed has of itself carried values up to slightly higher levels.

Strong unbleached sulphite of Swedish origin is quoted at around 3 cents per pound, ex-dock New York. Some brands are reported available at 2.90 to 2.95 cents; on the other hand, actual sales of certain brands have been recorded at 3.05 cents and possibly a little higher. Bleached sulphite, which has been affected chiefly by demand from artificial silk interests, is very firm at about 4.15 cents a pound ex-dock New York for prime grades. Swedish kraft is quoted at 3 to 3.10 cents, with the extra qualities bringing up to 3.25 cents. Easy bleaching sulphite ranges in price from about 3.15 to 3.40 cents on the dock at New York, and sales at the higher figure have been made. Foreign ground wood is quoted around $35 per ton ex-dock New York or other American Atlantic ports.

Imports of pulp into the United States in July amounted to 96,341 tons of chemical pulp and 20,865 tons of mechanical pulp. The imports of chemical grades compared with 100,162 tons received during June, and brought the total for the first seven months of this year up to 694,886 tons, giving a monthly average of 99,269 tons, compared with an average of 82,269 tons monthly in the same period last year. Total imports of ground wood in the first seven months of 1925 were 158,898 tons, a monthly average of 22,699 tons, against 15,076 tons in the corresponding time a year ago.

Receipts at the port of New York in September and current market quotations ex-dock New York follow:

Bleached sulphite, No. 1	4.10- 4.50
Unbleached sulphite, strong, No. 1	2.90- 3.10

Bleached and Unbleached
SULPHITES
KRAFT PULPS

Foreign and Domestic
GROUND
WOOD

PERKINS-GOODWIN CO.
NEW YORK
33 West 42nd St.

PAPER

PRINTING PAPER
OF
EVERY DESCRIPTION

One of Claflin's Many Economies

The Auxiliary Plug
and
"Quick Change" Filler

One of the Latest Improvements on Claflin Refiners and a Time and Labor Saver.

Can be used either on Ball Bearing or Babbitted Type Machine.

One piece filling, easy to handle.

Quickly changed by one man.

Costs less than old style solid plug.

Furnished either Special Alloy Steel, Cast Bronze, Manganese Steel or Lava Stone.

Prices quoted on request.

HERMANN MANUFACTURING CO., Lancaster, Ohio
WATEROUS ENGINE WORKS CO., Ltd., Brantford, Can., Licensed Mfrs.

Unbleached sulphite, No. 2	2.70- 2.90
Easy bleaching sulphite	3.15- 3.40
Mitscherlich unbleached, genuine	3.25- 3.50
Mitscherlich unbleached, ordinary	2.70- 2.90
Kraft, standard Swedish	3.00- 3.25
Groundwood, per ton	33.00-36.00

E. M. Sergeant Co., 615 lbs. from Oslo and 1,447 Gothenburg; Lagerloef Trading Co., 1,046 bls. from Bremen and 263 Kotka; Poland Paper Co., 5,343 bls. from Trieste; Price & Pierce, 2,400 bls. from Gothenburg; Tidewater Paper Mills Co., 12,933 bls. ground wood from Liverpool, N. S., 11,703 Weymouth, N. S., and 6,229 Murray Bay; International Acceptance Bank, 872 bls. from Rotterdam; Scandinavian Pulp Agency, 1,000 bls. from Skutskar; Johaneson, Wales & Sparre, 2,225 bls. from Sundsvall, 5,850 Hernosand and 895 Gothenburg; Bulkley, Dunton & Co., 1,000 bls. from Sundsvall, 4,500 Iggesund and 2,500 Stugsund; Buck, Kaier & Co., 600 bls. from Copenhagen; Borregaard Co., 600 bls. from Oslo; J. Andersen & Co., 300 bls. from Oslo, 800 Iggesund and 2,850 Hernosand; Nilsen, Lyon & Co., 500 bls. from Trondhjem; Hartig Pulp Co., 1,600 bls. from Hamburg; Pagel, Horton & Co., 6,000 bls. from Ornskoldsvik and 6,000 Husum; Castle & Overton, 1,515 bls. from Bremen; Ira L. Beebe & Co., 2,157 bls. from Bremen; J. F. Whitney & Co., 19,056 bls. ground wood from Sheet Harbor, N. F.; M. Gottesman & Co., 600 bls. from Rotterdam; National City Bank, 700 bls. from Hamburg; Central Union Trust Co., 400 bls. from Oslo; Mechanics & Metals National Bank, 500 bls. from Oslo; Order, 1,928 bls. from Bremen, 12,302 bls. ground wood from Weymouth, N. S., and 3,689 bls. from Kotka.

Paper Stock

Judging from arrivals through the port of New York, importations of rags and other papermaking materials into the United States have fallen off to some extent during the last several weeks, yet the tonnage coming into the country continues large when compared with normal imports and the slight drop from the high levels probably bears no significance.

Imports of papermaking rags into the U. S. in July amounted to 54,867,320 pounds, valued at $1,414,087, against 43,861,737 pounds of a value of $1,125,601 imported in June last, and 43,472,932 pounds of a value of $775,973 in July last year. Rag imports in the first seven months of 1925 totaled 352,614,161 pounds, valued at $9,972,226, contrasted with 266,625,629 pounds of a value of $5,656,842 in the same period a year ago. Imports of bagging, waste paper, etc., in July last were 9,414,774 pounds, compared with 7,433,673 pounds in June last, and 7,301,706 pounds in July a year ago. Imports of old rope and miscellaneous paper stock in July amounted to 5,612,653 pounds, against 6,055,389 pounds in June last, and 7,551,811 pounds in July last year.

Imports of all kinds of papermaking stock through the port of New York in September, with names of consignees, compiled from manifests of steamers reaching that port during the month, were as follows:

Old Rope

Brown Bros. & Co., 927 coils and 175 bls.; Ellerman's Wilson Line, 18 bls. and 146 coils; Mechanics & Metals National Bank, 11 bls.; W. Schall & Co., 67 coils; International Acceptance Bank, 113 coils; United Fruit Co., 9 bls.; Salomon Bros. & Co., 266 bls.; New York Trust Co., 41 bls.; Jaffe Products Co., 61 bls.; Order, 177 bls. and 44 coils.

Old Bagging

George M. Graves Co., 98 bls.; A. W. Fenton, Inc., 318 bls.; International Acceptance Bank, 251 bls.; Chemical National Bank, 94 bls.; National Bank of Commerce, 131 bls.; Chase National Bank, 2,071 bls.; Stone Bros. Co., 215 bls.; New York Trust Co., 152 bls.; Brown Bros. & Co., 58 bls.; Darmstaadt, Scott & Courtney, 114 bls.; Grace National Bank, 140 bls.; Katzenstein & Keene, 67 bls.; Equitable Trust Co., 25 bls.; Strupp & Co., 30 bls.; W. Schall & Co., 31 bls.; Mechanics & Metals National Bank, 35 bls.; British Bank of South America, 46 bls.; E. J. Keller Co., 908 bls.; Order, 983 bls.

Rags

Castle & Overton, 388 bls.; Maurice O'Meara Co., 212 bls.; E. J. Keller Co., 2,530 bls.; L. H. Abenheimer, 294 bls.; Darm-

MITTS & MERRILL

The Mitts & Merrill Shredder will reduce magazines, books, old paper and boxboard, frozen or dried pulp laps, roll and sheet stock in a thoroughly economical manner.

Built in sizes with spouts ranging from 18 to 45 inches wide.

We also build a 100% efficient "Hog" to reduce pulp mill bark and wood refuse.

MITTS & MERRILL
1013 Tilden St.
Saginaw, Mich.

Fed by GRAVITY

or

CONVEYOR

SOUTHWARK HYDRAULIC PRESSES

for Pulp, Sulphite, Baling, Etc.

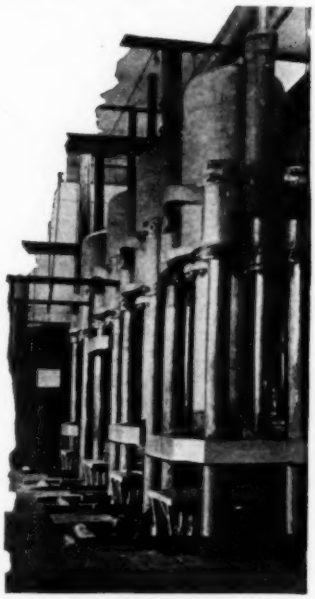
HYDRAULIC PUMPS, VALVES, FITTINGS, SHOCK ABSORBERS, PULP TRUCKS, ETC.

Southwark Pulp Truck, for Use with Presses Shown at the Right. Saves Time and Labor

Southwark Hydraulic Presses for dehydrating pulp have proven sturdy and efficient machines in every one of the many pulp mills where we have installed them.

The right hand cut shows an installation of four 600-ton Southwark Presses in a large pulp and paper mill. These presses are designed for use with Southwark Pulp Trucks, the trucks are loaded and run under the press, the pulp being compressed directly on the truck.

This feature gives fast operation, saves labor and eliminates curbs, boxes or other containers on the press.



Four 600-Ton Southwark Pulp Presses, Minnesota & Ontario Paper Co., International Falls, Minn.

SOUTHWARK FOUNDRY AND MACHINE CO.

AKRON, O.
100 E. South St.

400 Washington Ave.
PHILADELPHIA, PA.

CHICAGO
343 S. Dearborn St.

BARRE GRANITE IN PRESS ROLLS

Is Revolutionizing the Whole Paper Making Industry

If your Paper Machines are not equipped with Press Rolls of BARRE GRANITE you are not getting the results that you should get, for it is a recognized fact that granite rolls are much superior to any others and Barre Granite the best of all. Let us tell you about them.

Jones Brothers Company

BARRE, VT. BOSTON, MASS.

stadt, Scott & Courtney, 294 bls.; Robert Blank, 40 bls.; A. Hurst & Co., 50 bls.; I. Abela & Co., 100 bls.; C. R. Spence & Co., 435 bls.; American Wool Stock Co., 99 bls.; H. Muehlstein & Co., 381 bls.; Paul Berlowitz, 51 bls.; Atlas Waste Mfg. Co., 156 bls.; Victor Galaup, Inc., 76 bls.; Atterbury & McKelvey, 823 bls.; Salomon Bros. & Co., 50 bls.; Stone Bros. Co., 247 bls.; S. Green, 26 bls.; S. Birkenstein & Sons, 90 bls.; Rudolf Wolf, 58 bls.; Hartig Pulp Co., 40 bls.; George W. Millar & Co., 177 bls.; Atterbury Bros., 428 bls.; J. J. Patricof, 249 bls.; Albion Trading Co., 39 bls.; Barrett Co., 530 bls.; Murray Freighting Corp., 69 bls.; American-Palestine Line, 598 bls.; L. Muscat, 70 bls.; Jaffe Products Co., 6 bls.; J. M. Rabassa, 67 bls.; Bank of New York & Trust Co., 291 bls.; Garfield National Bank, 59 bls.; Central National Bank, 96 bls.; International Acceptance Bank, 237 bls.; Equitable Trust Co., 282 bls.; Chemical National Bank, 942 bls.; New York Trust Co., 181 bls.; Mechanical & Metals National Bank, 2,141 bls.; Guaranty Trust Co., 103 bls.; National City Bank, 1,623 bls.; Anglo-South American Trust Co., 701 bls.; Irving Bank-Columbia Trust Co., 808 bls.; Philadelphia National Bank, 225 bls.; Union National Bank, 96 bls.; Fidelity International Trust Co., 10 bls.; National Bank of Commerce, 296 bls.; Central National Savings Bank & Trust Co., 398 bls.; Chase National Bank, 29 bls.; State Bank, 182 bls.; A. W. Fenton, Inc., 2,442 bls.; Amsinck, Sonne & Co., 242 bls.; Brown Bros. & Co., 3,346 bls.; Ladenburg, Thalman & Co., 20 bls.; Goldman, Sachs & Co., 33 bls.; American Express Co., 10 bls.; Order, 3,466 bls.

Miscellaneous Paper Stock

Mechanics & Metals National Bank, 210 bls.; Brown Bros. & Co., 333 bls.; National City Bank, 230 bls.; J. Cohen & Sons, 29 bls.; W. Schall & Co., 305 bls.; Baring Bros. & Co., 204 bls.; Irving Bank-Columbia Trust Co., 107 bls.; Milton Snedeker Corp., 87 bls.; E. J. Keller Co., 249 bls.; Order, 333 bls.

Paper

Importations of paper into the United States are holding up on a fairly high level. Considerable quantities of printing paper and wrapping are being received from Scandinavian and German sources, and usual shipments of cigarette, filter, hanging and other kinds of paper are coming into the country in a more or less steady manner.

During July last the U. S. imported paper of all kinds to the value of $9,751,529, compared with $10,188,941 in June last, and $9,662,193 in July a year ago. In the first seven months of this year paper imports totaled in value $69,393,020, contrasted with $69,443,250 in the same period last year.

Imports of paper of all kinds through the port of New York in September follow, these data being taken from the manifests of vessels arriving at that port during the month:

Printing

Irving Bank-Columbia Trust Co., 707 rolls from Hamburg; Chemical National Bank, 289 rolls from Hamburg; Schenkers, Inc., 30 cs. from Trieste; J. P. Heffernan Paper Co., 119 bls. from Trieste and 11 bls. from Rotterdam; Keuffel & Esser Co., 155 rolls from Hamburg; H. Reeve Angel & Co., 219 cs. from Bremen; Titan Shipping Co., 46 cs. from Southampton; Anglo-South American Trust Co., 77 cs. from Oslo; M. Gottesman & Co., 173 rolls from Gothenburg; Perry, Ryer & Co., 131 cs. from Glasgow; B. F. Drakenfeld & Co., 63 cs. from Liverpool; Guaranty Trust Co., 15 rolls from Oslo; C. Steiner, 27 cs. from Hamburg; Martin & Bechtold, 25 cs. from Bremen; P. Puttmann, 78 cs. from Antwerp; Benedetti Hnos, 63 bls. from Trieste; International Forwarding Co., 18 cs. from Antwerp; Oxford University Press, 5 cs. from Liverpool; E. Dietzgen & Co., 10 cs. from Hamburg; Order, 1,579 rolls and 38 cs. from Bremen, 5 cs. from Hamburg, 3 cs. from Antwerp, and 2,040 rolls and 1,271 bls. from Kotka.

Wrapping

F. L. Kraemer & Co., 15 cs. from Antwerp and 18 cs. from Hamburg; Birn & Wachenheim, 10 cs. from Hamburg; Coy, Disbrow & Co., 16 bls. from Gothenburg; Thomas Barrett & Son, 63 bls. and 10 rolls from Gothenburg; Crepe Kraft Paper Co., 45 rolls from Gothenburg; Wilkinson Bros. & Co., 241 rolls and 93 bls. from Gothenburg; C. K. MacAlpine & Co., 20 bls. and 118 rolls from Gothenburg; M. M. Cohen, 103 rolls and

WAUSAU SULPHATE FIBRE CO.
MOSINEE, WISCONSIN
TRADE MARK
COPYRIGHTED

Cut down *excessive* wrapping paper investment. Why carry two wrapping paper lines for one wrapping paper *purpose?*

MOSINEE

presents a perfect wrapping paper, weight and strength for each wrapping purpose. Made in all weights from 15 pounds to 100 pounds basis. The one complete, standardized and economical line of wrapping paper sold.

Mosinee Kraft

"The Wrapper that Delivers the Goods"

Hungerford Filters
for
Clear Water

Hungerford Softening Filters
for
Soft Water

Hungerford & Terry, Inc.
Clayton, N. J.

STANDARD BLEACHING POWDER

Liquid Chlorine
Tank Cars 1-Ton Containers 150-Lb. Cylinders

Commercial Sulphate of Alumina
Natrona Porous Alum

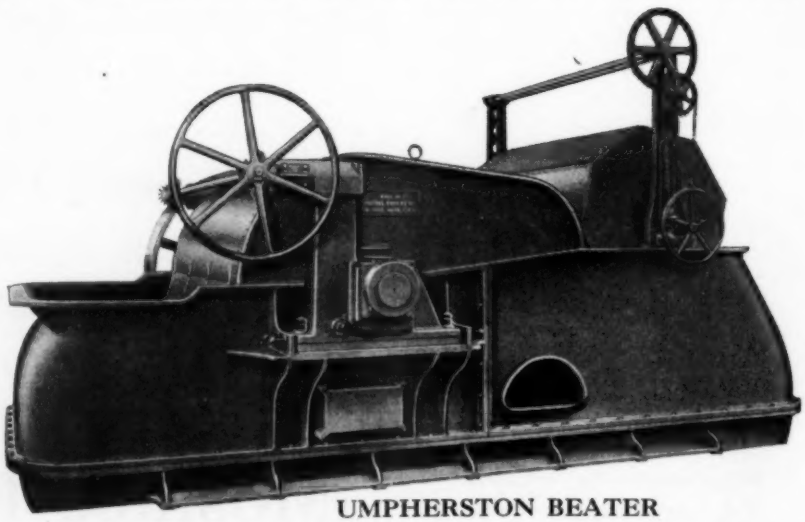
Pennsylvania Salt Mfg. Company
Philadelphia, Pa.

Western Paper Makers Chemical Company
Paper Makers Chemical Company

Kalamazoo, Mich. Holyoke, Mass. Easton, Pa.
Jacksonville, Fla. Pensacola, Fla. St. Austell, England

Rosin Size, Satin White, Clays, Fillers
Foam Killer, Felt Soap and Other Specialties

Holyoke Machine Co., Holyoke, Mass.
Makers of Improved Machinery for Wood Pulp and Paper Mills



UMPHERSTON BEATER

Washing and Beating Engines, Wood Pulp Grinders, Barkers, Chippers, Rag and Paper Dusters, Rag Cutters, Hydraulic Pumps and Presses, Hercules Water Wheels and Governors, Super-Calenders, Platers, Cotton and Paper Rolls.

129 bls. from Gothenburg; Maurice O'Meara Co., 257 bls. from Sundsvall; Safety Insulated Wire & Cable Co., 42 rolls from Glasgow; Borregaard Co., 2,203 rolls and 203 bls. from Gothenburg; Gilbert Paper Co., 58 bls. and 6 rolls from Gothenburg; Mugler & Umlauf, 108 bls. and 192 rolls from Gothenburg; Universal Paper Co., 66 bls. and 340 rolls from Gothenburg; Arkell Safety Bag Co., 228 rolls from Gothenburg; F. C. Strype, 16 cs. and 2 rolls from Antwerp and 5 cs. from Rotterdam; Blauvelt-Wiley Paper Mfg. Co., 69 bls. from Glasgow; J. B. Mast & Co., 4 cs. from Genoa; J. P. Heffernan Paper Co., 160 bls. from Hamburg; International Acceptance Bank, 27 bls. from Hamburg; Order, 178 bls. from Hamburg and 109 rolls from London.

Cigarette

Standard Products Corp., 307 cs. from Havre; Surbrug Co., 25 cs. from Southampton and 30 cs. from Havre; British-American Tobacco Co., 15 cs. from Liverpool; American Tobacco Co., 1,100 cs. from Bordeaux; R. J. Reynolds Tobacco Co., 640 cs. from St. Nazaire; DeManduit Paper Corp., 346 cs. from St. Nazaire; Bank of the Manhattan Co., 25 cs. from Lisbon; P. J. Schweitzer, 83 cs. from Marseilles; Hensel, Bruskman & Lorbacher, 26 cs. from Hamburg.

Writing

Independent Forwarding Co., 181 cs. from Liverpool; J. W. Hampton, Jr., & Co., 3 cs. from Hamburg; National City Bank, 10 cs. from Trieste; Guibont Freres & Co., 39 cs. from Havre; J. Kennedy, 5 cs. from Havre; S. Stern, 6 cs. from London; Distinctive Writing Paper Co., 2 cs. from Havre.

Drawing

Keuffel & Esser Co., 90 cs. from Hamburg, 11 cs. from Rotterdam and 32 cs. from Liverpool; E. Deitzgen & Co., 57 cs. from Hamburg and 6 cs. from London; H. Reeve Angel & Co., 4 cs. from London; Devoe & Raynolds Co., 4 cs. from London; Leonhardt & Brush, 97 cs. from Hamburg; Order, 4 cs. from London.

Filter

R. Reeve Angel & Co., 46 cs. from London; J. Manheimer, 55 bls. from Southampton; George M. Graves Co., 37 rolls from Rotterdam; E. Fougera & Co., 77 cs. from Bordeaux.

Tissue

Schenkers, Inc., 9 cs. from Hamburg; F. C. Strype, 19 cs. from Liverpool; W. G. Byrnes & Co., 4 cs. from Liverpool.

Photo

Globe Shipping Co., 188 cs. from Bremen; P. C. Zuhlke, 274 cs. from Antwerp; P. Puttmann, 166 cs. from Antwerp; S. Riglander & Co., 55 cs. from Antwerp; Gevaert Co. of America, 72 cs. from Antwerp; F. Henjes, Jr., 126 cs. from Bremen; J. J. Gavin & Co., 5 cs. from Liverpool.

Hanging

F. J. Emmerich & Co., 9 bls. from Liverpool and 3 bls. from Hamburg; C. A. Haynes & Co., 79 bls. from London; W. H. S. Lloyd & Co., 17 bls. from Liverpool; Globe Shipping Co., 14 bls. from Hamburg; F. & R. Trading Co., 611 bls. from Antwerp; A. C. Dodman, Jr., & Co., 43 bls. from Liverpool, 4 bls. from Southampton and 22 pkgs. from Antwerp; Order, 142 bls. from Kotka.

Board

H. H. Ayes, 3 cs. from Havre; Schenkers, Inc., 64 bls. from Trieste; Adrian Vuyck, 530 rolls from Rotterdam; Bendix Paper Co., 115 cs. from Hamburg; Metropolitan Import & Mfg. Co., 52 cs. from Hamburg; Hensel, Bruckman & Lorbacher, 10 cs. from Havre and 3 cs. from Rotterdam; Domestic Paper Mills, 30 rolls from Rotterdam; Vaucassin Silk Mills, 16 bls. from Havre; A. Leunis, 38 cs. from Hamburg; Order, 5 cs. from Havre, 202 rolls from Rotterdam and 30 bls. from Hamburg.

Miscellaneous

Japan Paper Co., 11 cs. from Havre, 135 cs. from Genoa and 4 cs. from Barcelona; Coenca-Morrison Co., 11 cs. from Havre and 4 cs. from Trieste; P. H. Petry & Co., 15 cs. from Hamburg, 25 pkgs. from Havre and 18 cs. from Rotterdam; Whiting-Patterson Co., 9 cs. from Hamburg, 28 cs. from Southamp-

Starch

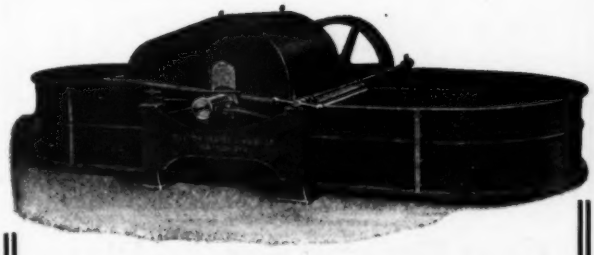
ECONOMY can never be mistaken for cheapness. In the matter of sizing material, starch is cheaper than an all-glue size, yet the results are identical—in fact, the paper made with starch sizing is stronger.

FOX HEAD NIAGARA SPECIAL PAPER

Our experts can show you how these starches can be used advantageously in your mill. They will gladly call on request.

Corn Products Refining Company
17 Battery Place New York

Starch



"Dayton" Beating Engines are Built for Heavy Duty

Dayton Beater and Hoist Co.
DAYTON, OHIO

THE HOME OF STEEL SHELL BURRS
AND
YELLOW JACKET SHOWERS

All Products Guaranteed to Suit You

F. W. Roberts Manufacturing Company

Read the "ROBERTS IDEA"

Lockport, N. Y. Niagara Falls, Ont.

SCREEN PLATES *and*
DANDY ROLLS

Watermarking a Specialty

Central Manufacturing Co.
The Quick Service House
KALAMAZOO MICHIGAN

Pickles' Patent
Automatic Steam Regulator
FOR
Paper Making Machines

Which absolutely control the drying of the sheet. Installed on sixty days' trial

W. F. PICKLES Buckland, Conn.

Remember
WM. A. HARDY & SONS
FITCHBURG, MASS.
Originators and Oldest Manufacturers
OF THE
Cast Bronze Screen Plate
ALSO SPECIALIZE IN
Acid Resisting Digester Parts

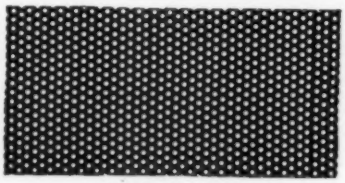
UNION SCREEN PLATE CO.
Fitchburg, Mass., U. S. A. Lennoxville, P. Q., Canada

UNION BRONZE SCREEN PLATES
(Best phosphorized Cast Metal)

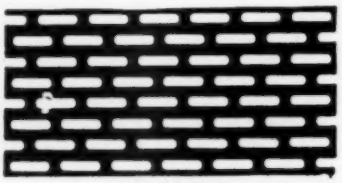
Old Plates RECLOSED and RECUT to accurate gauge
UNION BRONZE SCREWS for Screen Plates
Immediate Delivery of the Largest Orders. Satisfaction Guaranteed

The Witham Screen Plate Fastener, Patented
THE ORIGINAL THE BEST

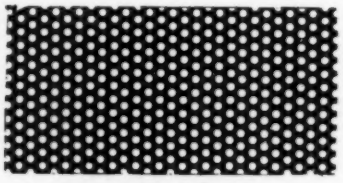
Perforated Metal Screens for Pulp and Paper Mills



.065 inch round



⅛ x ⅜" Slots



3/32 inch round

Steel, Copper, Brass, Bronze and other alloys punched for Centrifugal and Rotary Screens, Pulp Washers, Drainer Bottoms, Filter Plates, etc.

CHARLES MUNDT & SONS 57-65 Fairmount Avenue, Jersey City, N. J.

ton and 48 rolls from Gothenburg; W. Hartmann & Co., 17 cs. from Hamburg; Bernard, Judae & Co., 7 cs. from Gothenburg; Richardson Bros., 3 cs. from Liverpool; F. L. Kraemer & Co., 12 bls. from Hamburg; International Forwarding Co., 26 cs. from Havre and 66 cs. from Hamburg; Milton Paper Co., 12 cs. from Antwerp; C. A. Johnson & Co., 13 bls. from Liverpool; Davies, Turner & Co., 12 pkgs. from Havre; C. B. Richard & Co., 13 cs. from Bremen; Hensel, Bruckman & Lorbacher, 4 cs. from Bremen; C. W. Williams & Co., 20 cs. from Antwerp; S. Gilbert, 14 cs. from Rotterdam; Heemsoth, Basse & Co., 13 pkgs. from Rotterdam; American Express Co., 13 cs. from Bremen; A. Flinn & Co., 7 cs. from Havre; Independent Forwarding Co., 3 cs. from Southampton.

Foreign Trade Opportunities

Additional information regarding the following foreign trade opportunities issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce may be obtained from the Bureau in Washington, D. C., or its branch offices. It is requested that the number of the inquiry be given at all times.

No. 16528—Print paper for newspapers, books, stationery, hand bills, etc. Constantinople, Turkey. Purchase and agency desired.

No. 16495—China clay refining machinery. Bombay, India. Purchase desired.

No. 16785—Machinery to cut index cards, fold, press and stick cardboard. Barcelona, Spain. Purchase and agency desired.

No. 16784—Machines, rotation, for rolling, printing and cutting paper. Frankfort, Germany. Purchase desired.

No. 16783—Old newspapers. Manchester, England. Purchase desired.

No. 16768—Fancy papers. Berlin, Germany. Sole agency desired.

No. 16785—Paper, linen, fine cardboard, and imitation cloth and leather paper. Barcelona, Spain. Purchase and agency desired.

No. 16757—Wall board. Regensburg, Germany. Purchase desired.

No. 16716—Cheap wrapping paper. Port au Prince, Haiti. Agency desired.

No. 16864—Paper collars. Rio de Janeiro, Brazil. Purchase and agency desired.

No. 16857—Paper and cardboard making machinery. Berlin, Germany. Purchase and agency desired.

No. 16865—Toilet paper, paper towels, and colored crepe paper. Johannesburg, South Africa. Sole agency desired.

German Manufacturers Visiting Rayon Plants Here

Barthold Deutsch, wood pulp manufacturer of Mannheim, Germany, and his chief chemist, Dr. Hellmuth Nuller Clemm, arrived in New York on the steamer Resolute, September 17, for the purpose of making a tour of the pulp and artificial plants in the U. S. and Canada.

Mr. Deutsch stated that the development of the artificial silk industry in Germany and Italy has reached the stage where the poor people of those countries are clothing themselves almost entirely in artificial silk garments, the fiber of which is manufactured from wood pulp.

Luncheon in Honor of W. C. Powers

A luncheon was given in honor of W. C. Powers, formerly general sales manager of the Great Northern Paper Co., but now of London, Eng., where he has resided for the last six years, in a private dining room in the Hotel Roosevelt, New York, on September 2, at which George F. Steele, paper broker of New York, was host and at which was a representative gathering of paper men. Mr. Powers, or "Billy" Powers as he is intimately known, spent the month of September in the United States studying paper marketing and manufacturing conditions. During his many years affiliation with the trade on this side of the Atlantic, prior to his departure for England, he gained a large circle of friends, many of whom paid their respects at the luncheon arranged for him by Mr. Steele.

Philadelphia Quartz Company
General Offices: 121-129 S. 3rd St.
Philadelphia, Pa., U. S. A.

For Paper Makers

"A-SYRUP" Sodium Silicate
"S"-BRAND Sodium Silicate
IN
Tank Cars
Barrels
Drums

Works

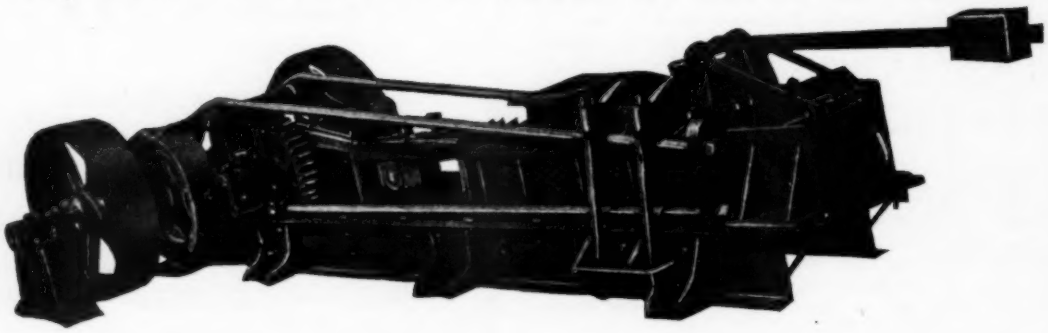
Chester, Pa. Anderson, Ind.
Rahway, N. J. Buffalo, N. Y.
Kansas City, Kans.

Established 1831

RUSS GELATIN CO.
WORKS—WESTFIELD, MASS.
MANUFACTURERS OF
GELATIN and GLUE
ANIMAL SIZING GLUE STOCK
LARGEST SPECIALISTS IN AMERICA ON
FINE WRITING PAPER SIZING
E. F. RUSS COMPANY 287 Atlantic Avenue BOSTON, U. S. A.

Ticonderoga Machine Works
TICONDEROGA, N. Y., U. S. A.
MANUFACTURERS OF
WARREN IMPROVED CALENDER DOCTORS
With Flexible Blades, Universal Adjustment and Control (PATENTED)
WARREN IMPROVED PATENT DOUBLE DRUM WINDERS
Patent BALL VALVE Hydrant
Stock Circulating Systems *and*
other Paper Mill Specialties
SEND FOR OUR BULLETIN

Repeat Orders Prove Success of the



Improved

GIANT NEKOOSA BARK PRESS

Prepares Bark for Fuel 52 Per Cent Dry

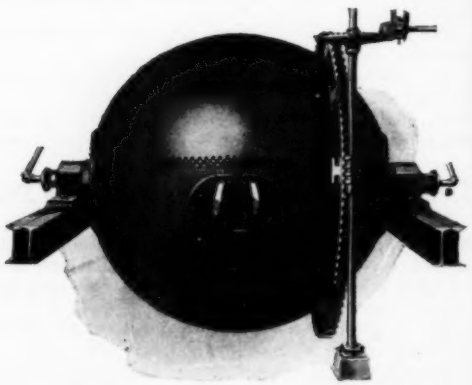
NEKOOSA MOTOR & MACHINE CO., Nekoosa, Wis.

BIGGS ROTARY BLEACHING BOILERS represent the most rotary boiler value you can get for your money anywhere.

This extra value built-in by Biggs thoroughness, care, and accuracy is the reason why you can expect the same performance from Biggs Rotaries as those who have had them in service for the past 38 years.

The Biggs Boiler Works Company

Seneca Place and Case Avenue AKRON, OHIO



Globe and Cylinder Rotary Bleaching Boilers, Digesters, Riveted Steel Tanks, Flumes, Smokestacks, Penstocks, General Steel Plate Construction of every description.

BOILER WORKS The Biggs CO. EST 1867 AKRON OHIO

GLOBE and CYLINDER

ROTARY BLEACHING BOILERS

for Years of Dependable Cooking and Bleaching